

IDENTIFICATION

PRODUCT CODE: DEC-08-LBASA-A-LA
PRODUCT NAME: LISTING OF BASIC-8
DATE: FEBRUARY 10, 1972

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LAB - 0 \ E BASIC

WRITTEN BY JACK BURNES

THIS BASIC IS A COMBINATION OF LAB-8/E BASIC
AND 8K-BASIC FOR THE PDP-8. TO CREATE IT
FOR THE LAB-8/E SET "MACHINE=1", TO CREATE IT FOR
THE PDP-8 SET "MACHINE=0".

MACHINE 00

THIS CODE OVERLAYS THE BINARY LOADER IN FIELD ONE TO MAKE LAB-8/E BASIC SELF STARTING.

IFNZRO MACHINE

FIELD 1

*7700

```

      JMP I    UGETWD

```

***6000**

```
DCA      UTEMP
TAD      INTHLT
DCA I    INTPLC
TAD      UTEMP
SZA
JMP I    INTPLC
CIF COF 0
```

SIC.LBE

PAL8-V7

1-1

JMP I .+1
START

INTHLT, HLT
INTPLC, 7700

/BASIC4,52

0000

FIELD 0

/TO HELP BINARY LOADER IN CASE HE BLOWS IT.

```
/00000 +-----+
/      | SYSTEM |
/11000 +-----+
/      | ARRAY  |
/      | SPACE  |
/      +-----+
/      | FREE   |
/      +-----+
/      | CODIFIED|
/      | BASIC  |
/      +-----+
/      | SYMBOL  |
/      | TABLE |
/      +-----+
/      | LINEBUF |
/      +-----+
/      | STACK  |
/      +-----+
/      | FORLIST |
/      +-----+
/      | GOLIST  |
/17756 +-----+
/      | RIM     |
/      | LOADER  |
/17777 +-----+
```

```
/4200 +
/4201 -
/4302 *
/4303 /
/4404 ~
/4105 "
/4106 <
/4107 >
/4110 <"
```

```

/4110  <=
/4111  >=
/4111  <>
/4112  <>
/4213  (UMINUS)
/4014  (DONE)
/4015  ,
/4016  /
/4017  )
/4021  TO
/4022  STEP
/4023  (
/4024  FN
/4025  COS
/4026  TAN
/4027  ATN
/4030  LOG
/4031  EXP
/4032  SQR
/4033  ABS
/4034  SIN
/4035  INT
/4036  RND
/4037  SIN
/6000  (CRLF)
/6000  \
/6001  END
/6002  FOR
/6003  GOSUB
/6004  GOTO
/6004  THEN
/6005  IF
/6006  INPUT
/6007  LET
/6010  NEXT
/6011  PRINT
/6012  RETURN
/6013  STOP
/6014  DIM
/6015  RESTORE
/6017  DEF
/6020  READ
/6021  DATA
/6022  (EXIT)
/6023  (EOF)

```

```

0000  FEXIT=0000
0040  FSNE=0040
0050  FSEQ=0050
0100  FSGE=0100
0110  FSLT=0110
0140  FSGT=0140
0150  FSLE=0150

```

1000 FJMP=1000
1400 FJMPI=1400
2000 FST=2000
2400 FSTI=2400
3000 FLD=3000
3400 FLDI=3400
4000 FAD=4000
4400 FADI=4400
5000 FSB=5000
5400 FSKI=5400
6000 FMP=6000
6400 FMPI=6400
7000 FDI=7000
7400 FDI=7400
8000 FWD=200
8600 BKWD=600

6530 ADCL=6530
6531 ADLM=6531
6532 ADST=6532
6533 ADRB=6533
6534 ADSK=6534
6535 ADSE=6535
6536 ADLE=6536
6537 ADRS=6537
6050 DILC=6050
6051 DICO=6051
6052 DI80=6052
6053 DILX=6053
6054 DILY=6054
6055 DIXY=6055
6056 DILE=6056
6057 DIRE=6057
6134 CLEN=6134
6133 CLAB=6133
6132 CLOE=6132
6130 CLZE=6130
6131 CLSK=6131
6137 CLCA=6137
6135 CLSA=6135
6136 CLBA=6136

00000 2000 0
 00001 5402 JMP I .+1
 00002 6620 INTER

/INTERUPT ROUTINES.
 /UP, UP AND AWAY.

00003 2000 ARRLOC, 0
 00004 2000 CODELOC, 0
 00005 3000 PSYMTAB, 0
 00006 0000 NSYMTAB, 0
 00007 0215 0215, 215
 00010 0212 0212, 212
 00011 0260 0260, 260
 00012 2000 OV, 0
 00013 0000 INDEX1, 0
 00014 0000 INDEX2, 0
 00015 2000 DISAUTO, 0
 00016 0000 AC3, 0
 00017 0000 AC2, 0
 00020 0000 AC1, 0
 00021 0000 OP3, 0
 00022 0000 OP2, 0
 00023 0000 OP1, 0
 00024 0000 ACS, 0
 00025 0000 ACE, 0
 00026 0000 OPS, 0
 00027 0177 0177, 177
 00030 0000 OPE, 0
 00031 0000 TMP, 0
 00032 7201 PGETCH, GETCH
 00033 0741 PPUTCH, PUTCH
 00034 0000 DIMFLAG, 0
 4435 FENTER=JMS I .IFPT
 00035 4200
 00036 0000 POL, 0
 00037 7512 PLINBUF, LINBUF
 00040 0266 MLINBUF, -LINBUF
 00041 0135 MENLIN, -ENDLIN
 00042 0000 PRTEMP, 0
 00043 0000 DECEXP, 0
 00044 5335 PNUMBUF, NUMBUF
 00045 0000 LOCCTR, 0
 00046 0000 READLOC, 0
 00047 7363 PARERR, ARGERR
 00050 0000 WORD, 0
 00051 0240 0240, 240
 00052 0000 LINENO, 0
 00053 0000 GOTEMP, 0
 00054 7740 07740, 7740
 00055 7770 07770, 7770
 00056 0000 EPTR, 0
 00057 0000 FPTR, 0
 00060 0000 GPTR, 0
 00061 0000 HPTR, 0
 00062 0002 02, 2
 00063 0000 FORCT, 0

00064	0000	SNUMFLG,0
00065	0012	C12, 12
00066	0000	OLDDP, 0
00067	0000	ADDRESS,0
00070	0077	077, 77
00071	0377	0377, 377
00072	0007	07, 7
00073	0000	OPERAND,01010
00074	0000	
00075	0000	
00076	7501	PTEXT, XXTEXT
00077	4142	PERROR, ERROR
00100	6441	PSXERR, SXERR
00101	1004	PEVAL, EVAL
00102	1400	PGETADD,GETADDR
00103	0213	PEXECUT,EXECUTE
00104	2364	PPUSH, PUSH
00105	3551	PPOP, POP
00106	4744	PFIX, FIX
00107	1202	PGOTOPR,GOTOPR
00110	0472	PPASSCR,FASSCR
00111	1015	PGETOPR,GETOPR
00112	0341	PSTOVAR,STOVAR
00113	0311	PGETVAR,GETVAR
00114	3702	PPRINTX,PRINTXT
00115	1674	PGETBLK,GETBLK
00116	2707	PSLOOP, SLOOP
00117	5000	POUTNUM,OUTNUM
00120	2405	PEOIT, EOIT
00121	6430	PSTICKI,STICKIT
00122	3110	PNONBLN,NONBLNK
00123	3747	PPRINUM,PRINUM
00124	2603	PGETLIN,GETLIN
00125	7644	PPOLIST,POLIST
00126	0000	COLUMN, 0
00127	0000	INDEV, 0
00130	0000	OUTD2, 0
00131	0000	OUTDEV, 0
00132	0000	ODEV, 0
00133	0000	CNTLO, 0
00134	0000	NOINT, 0
00135	0000	RBSWCH, 0
00136	0000	DISB, 0
00137	7116	PRESET, RESET1
00140	7465	SPECINT,CCINTX
00141	7326	PCOWT, COWT
00142	7146	DELOUT, OUTDEL
00143	0360	CNCLR, CLRCNT
00144	6413	SPLEFT, RMLEFT
00145	0000	PTEN, TEN
00146	4600	PANORM, ANORM
00147	4402	PARI, AR1
00150	4654	PALI, AL1
00151	2014	ONE, 2014
00152	0000	ZERO, 01010

/THIS PREVENTS INTERRUPTS DURING CRITICAL TIMES.


```

00153 0000
00154 0000
00155 0200 0200, 200
00156 0000 FPFLAG, 0
00157 4435 POADD, OADD
00160 0004 04, 4
00161 2330 PLINFIX,LINFIX
00162 7745 07745, 7745
00163 6400 PCHKFIT,CHKFIT
00164 7725 PGOLIST,GOLIST
00165 0000 GSBPTR, 0
0001 GET#1
4566 ISIT#JMS I ,JXISIT/XGISIT
00166 4073
00167 4066
4570 MUSTBE#JMS I ,JXMUST/XGMUST
00170 7352
00171 7345
00172 7563 PLBEGIN,LBEGIN
00173 0214 MLBEGIN,-LBEGIN-1
00174 0074 MLEND, -ENDPOL
00175 4104 PISITLI,ISITLI

```

0200 PAGE

0177 *-1

```

00177 0000 GETWO, 0
00200 1445 TAD I LOCCTR
00201 3050 DCA WORD
00202 2045 ISZ LOCCTR
00203 5577 JMP I GETWO
00204 0205 PLETOO, LETDO
00205 4570 LETOO, MUSTBE /' '
00206 3673 3673
00207 4501 JMS I PEVAL
00210 4570 MUSTBE /((CR) OR '\
00211 2000 2000
00212 4341 JMS STOVAR
00213 4177 EXECUTE,JMS GETWO
00214 1204 TAD PLETOO
00215 3311 DCA GETVAR
00216 1450 TAD I WORD
00217 7510 SPA
00220 5231 JMP KEYWD
00221 7640 SZA CLA /IS IT A LINENO
00222 5313 JMP NOTKWD /NO
00223 1050 TAD WORD

```

00224	3052	OCA	LINE0	
00225	4177	JMS	GETWD	
00226	1450	TAD I	WORD	
00227	7722	SMA CLA		
00230	5313	JMP	NOTKWD	
00231	7332	KEYWD, CLA CLL	CML RTR	
00232	1450	TAD I	WORD	
00233	7420	SNL	/IS IT A STATEMENT WORD	
00234	5500	JMP I	PSXERR /NO	
00235	1240	TAD	SJUMP	
00236	3237	DCA	.+1	
00237	7402	HLT		
00240	5641	SJUMP, JMP I	.+1	
00241	0213	EXECUTE		
00242	2567	END		
00243	0413	FOR		
00244	0505	GOSUB		
00245	0517	GOTO		
00246	0375	IF		
00247	4007	INPUT		
00250	0312	LET		

00251	0600	NEXT
00252	2173	PRINT
00253	0677	RETURN
00254	2570	STOP
00255	6472	DIM
00256	3773	RESTORE
00257	0467	SKIPIT
00260	1576	DEF
00261	1623	READ
00262	0467	SKIPIT
00263	2402	EXIT
00264	2570	STOP
00265	7173	TTYIN
00266	7165	TTYOUT
00267	7163	LPTOUT
00270	7164	PTPOUT
00271	7172	PTRIN
00272	6441	SXERR
00273	5573	RUBO
00274	5574	NORUBO
		IFNZRO MACHINE<

/THIS SLOT IS NOW FREE, (6031)

CLEAR
 DELAY
 USE
 PLOT
 REALTIME
 SETRATE
 SETCLOCK
 WAITC
 WAIT
 SXERR
 ACCEPT
 REJECT>

/"UCOM" --- USER COMMAND.

IFZERO MACHINE<

00275	6441	SXERR
00276	6441	SXERR
00277	6441	SXERR
00300	6441	SXERR
00301	6441	SXERR
00302	6441	SXERR
00303	6441	SXERR
00304	6441	SXERR
00305	6441	SXERR
00306	6441	SXERR
00307	6441	SXERR
00310	6441	SXERR

```

00311 0000 GETVAR, 0
00312 4177 LET, JMS GETWD
00313 4572 NOTKWD, MUSTBE /A VARIABLE
00314 7000 7000
00315 1052 TAD WORD
00316 3343 DCA VAR
00317 3344 DCA SSONE
00320 3345 DCA SSTWO
00321 4567 GET+ISIT /'('
00322 3755 3755
00323 5711 JMP I GETVAR /NO
00324 4501 JMS I PEVAL
00325 4506 JMS I PFIX
00326 3344 DCA SSONE
00327 4566 ISIT /', '
00330 3763 3763
00331 5335 JMP NOCOMMA /NO
00332 4501 JMS I PEVAL
00333 4506 JMS I PFIX
00334 3345 DCA SSTWO
00335 4570 NOCOMMA, MUSTBE /')'
00336 3761 3761
00337 4177 JMS GETWD
00340 5711 JMP I GETVAR
00341 0000 STOVAR, 0
00342 4502 JMS I PGETADDR
00343 0000 VAR, 0
00344 0000 SSONE, 0
00345 0000 SSTWO, 0
00346 4435 FENTER
00347 2467 FSTI ADDRESS
00350 0000 FEXIT
00351 5741 JMP I STOVAR
00352 4477 FNERR, JMS I PERROR
00353 0625 TEXT 'FUNCTION'
00354 1603
00355 2411
00356 1716
00357 0000
00360 0000 CLRCNT, 0 /ROUTINE WHICH CHECKS STATUS OF CONTROL C FLAG.
00361 7201 CLA IAC
00362 1134 TAD NOINT /WAS IT SET TO -1?
00363 7650 SNA CLA
00364 5767 JMP I PBOMB /YEP, GIVE STOP MESSAGE.
00365 3134 DCA NOINT /NOPE, RESET IT,
00366 5760 JMP I CLRCNT /AND EXIT

00367 6670 PBOMB, CNTLCR

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00370 4477 SPACERR, JMS I PERROR
00371 2417 TEXT 'TOO-BIG'

```

00372 1755
00373 0211
00374 2700

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00375 4501 IF, JMS I PEVAL
00376 4435 FINTER
00377 2073 FJT OPERAND
00400 0000 PEXIT
00401 4570 MUSTBE /'THEN'
00402 1774 1774
00403 1073 TAD OPERAND
00404 7750 SPA SNA CLA
00405 5267 JMP SKIPIT
00406 4567 GET+ISIT /A LINENO
00407 0000 0000
00410 5612 JMP I XEXECU
00411 5320 JMP GOTO+1
00412 0214 XEXECU, EXECUTE+1
00413 4571 FOR, GET+MUSTBE /A VARIABLE
00414 7000 7000
00415 4357 JMS FINDIT
00416 5235 JMP NOTHERE
00417 7201 CLA IAC
00420 1013 TAD INDEX1
00421 3014 DCA INDEX2
00422 7240 CLA CMA
00423 1013 TAD INDEX1
00424 3013 DCA INDEX1
00425 5232 JMP INLUPF
00426 1414 LUPF, TAD I INDEX2
00427 3413 DCA I INDEX1
00430 1414 TAD I INDEX2
00431 3413 DCA I INDEX1
00432 2053 INLUPF, ISZ GOTEMP
00433 5226 JMP LUPF
00434 2063 ISZ FORCT
00435 1063 NOTHERE, TAD FORCT
00436 1304 TAD OI1
00437 7750 SPA SNA CLA
00440 5301 JMP FORERR

```

/CAN'T FIT 9 IN FORLIST

00441	1250	TAD	WORD
00442	7041	CIA	
00443	3413	OCA I	INDEX1
00444	1250	TAD	WORD
00445	3252	OCA	FORVAR
00446	4571	GET+MUSTBE	/'0'
00447	3673	3673	
00450	4521	JMS I	PEVAL
00451	4502	JMS I	PGETADDR
00452	0000	FORVAR, 0	
00453	0000	0	
00454	0000	0	
00455	4435	FENTER	
00456	2467	FSTI	ADDRESS
00457	0000	FEXIT	
00460	4570	MUSTBE	/'TO'
00461	3757	3757	
00462	1045	TAD	LOCCTR
00463	3413	OCA I	INDEX1
00464	7240	CLA CMA	
00465	1063	TAD	FORCT
00466	3063	OCA	FORCT

00467	4671	SKIPIT, JMS I	PIGNORE	/LOOK FOR "\" OR C.R.
00470	5503	JMP I	PEXECUTE	/AND EXECUTE THE NEXT STATEMENT.

00471 2115 PIGNORE, IGNORE

00472	0000	PASSCR, 0		/THIS LOOKS FOR A REAL C.R.
00473	4671	JMS I	PIGNORE	/LOOK FOR "\" OR C.R.
00474	2050	ISZ	WORD	
00475	4566	ISIT		
00476	4100	4100		/A REAL C.R. ?
00477	5273	JMP	,=4	/NOPE, A SLASH.
00500	5672	JMP I	PASSCR	/AND RETURN TO CALLER.

```

00501 4477 FORERR, JMS I   PERROR
00502 0617      TEXT 'FOR'
00503 2200
00504 0011 011,      11
00505 4177 GOSUB,   JMS      GETWD
00506 4332      JMS      GOBOTH
00507 1165      TAD      GSBPTR
00510 1325      TAD      MGSBEND
00511 7650      SNA CLA
00512 5326      JMP      DEEPERR
00513 1045      TAD      LOCCTR
00514 3565      DCA I    GSBPTR
00515 2165      ISZ      GSBPTR
00516 5321      JMP      GOTO+2
00517 4177 GOTO,   JMS      GETWD
00520 4332      JMS      GOBOTH
00521 2053      ISZ      GOTEMP
00522 1453      TAD I    GOTEMP
00523 3045      DCA      LOCCTR
00524 5503      JMP I    PEXECUTE
00525 0023 MGSBEND, -GSBEND
00526 4477 DEEPERR, JMS I   PERROR
00527 0717      TEXT 'GOSUB'
00530 2325
00531 0200
00532 0000 GOBOTH, 0
00533 4570      MUSTBE      /A LINENO
00534 0000      0000
00535 1050      TAD      WORD
00536 3053      DCA      GOTEMP
00537 2050      ISZ      WORD
00540 4566      ISIT      /DEFINED
00541 0000      0000
00542 5350      JMP      ISITDF
00543 4477      JMS I    PERROR
00544 1411      TEXT 'LINENO'
00545 1605
00546 1617
00547 0000
00550 4571 ISITDF, GET+MUSTBE / (CR) OR '\
00551 2000      2000
00552 5732      JMP I    GOBOTH
00553 0000 VARTEMP, 01010
00554 0000
00555 0000
00556 7704 PXFORLI, FORLIST-1
00557 0000 FINDIT, 0
00560 1063      TAD      FORCT
00561 3053      DCA      GOTEMP
00562 1356      TAD      PXFORLIST
00563 3013      DCA      INDEX1
00564 5372      JMP      INLOOP
00565 1413 FINDLUP, TAD I    INDEX1
00566 1050      TAD      WORD

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00567 7650      SNA CLA
00570 5375      JMP      FOUND
00571 2013      ISZ      INDEX1
00572 2053      INLOOP, ISZ      GOTEMP
00573 5365      JMP      FINDLUP
00574 5757      JMP I      FINDIT
00575 2357      FOUND,  ISZ      FINDIT
00576 5757      JMP I      FINDIT

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0600

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00600 4571      NEXT,  GET+MUSTBE      /A VARIABLE
00601 7000
00602 4672      JMS I      PFINDIT
00603 5273      JMP      NEXTERR
00604 1050      TAD      WORD
00605 3237      DCA      NEXTVAR
00606 4571      GET+MUSTBE      /((CR) OR '\')
00607 2000
00610 1045      TAD      LOCCTR
00611 3271      DCA      LOCTEMP
00612 1413      TAD I      INDEX1
00613 3045      DCA      LOCCTR
00614 4501      JMS I      PEVAL
00615 4435      FENTER
00616 2303      FST+FWD+FORLIM=,
00617 0000      FEXIT
00620 4566      ISIT      /((CR) OR '\')
00621 2000
00622 5226      JMP      TRYSTP /NO
00623 4435      FENTER
00624 3151      FLO      ONE
00625 1207      FJMP+FWD+GOTSTEP=,
00626 4570      TRYSTP, MUSTBE      /'STEP'
00627 3756
00630 4501      JMS I      PEVAL
00631 4570      MUSTBE      /((CR) OR '\')
00632 2000
00633 4435      FENTER
00634 2270      GOTSTEP, FST+FWD+FORSTEP=,
00635 0000      FEXIT
00636 4502      JMS I      PGETADDR
00637 0000      NEXTVAR, 0
00640 0000      0
00641 0000      0
00642 4435      FENTER
00643 3467      FLDI      ADDRESS
00644 4260      FAD+FWD+FORSTEP=,
00645 2672      FST+BKWD+,-VARTEMP
00646 5253      FSB+FWD+FORLIM=,
00647 0000      FEXIT
00650 1024      TAD      ACS
00651 1324      TAD      FORSTEP
00652 7700      SMA CLA
00653 1020      TAD      AC1

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00654 7640      SZA CLA
00655 5263      JMP      FORDONE
00656 4435      FENTER
00657 3704      FLD+BKW0+,-VARTEMP
00662 2467      FSTI      ADDRESS
00661 0000      FEXIT
00662 5503      JMP I      PEXECUTE
00663 1271      FORDONE,TAD      LOCTEMP
00664 3045      DCA      LOCCTR
00665 2063      ISZ      FORCT
00666 2053      ISZ      GOTEMP
00667 5265      JMP      ,-2
00670 5503      JMP I      PEXECUTE
00671 0000      LOCTEMP,0
00672 0557      PFINDIT,FINDIT
00673 4477      NEXTERR,JMS I      PERROR
00674 1605      TEXT 'NEXT'
00675 3024
00676 0000
00677 4571      RETURN, GET+MUSTBE      /(CR) OR '\ '
00720 2000      0000
00701 1165      TAD      GSBPTR
00702 1320      TAD      MGOLIST
00703 7650      SNA CLA
00704 5313      JMP      RETNERR
00705 7240      CLA CMA
00706 1165      TAD      GSBPTR
00707 3165      DCA      GSBPTR
00710 1565      TAD I      GSBPTR
00711 3045      DCA      LOCCTR
00712 5503      JMP I      PEXECUTE
00713 4477      RETNERR,JMS I      PERROR
00714 2205      TEXT 'RETURN'
00715 2425
00716 2216
00717 0000
00720 0053      MGOLIST,-GOLIST
00721 0000      FORLIM, 01010
00722 0000
00723 0000
00724 0000      FORSTEP,010
00725 0000
00726 0000      SGN,      0
00727 4435      FENTER
00730 0100      FSQE
00731 3205      FLD+FWD+MNSONE-,
00732 0150      FSLE
00733 3151      FLD      ONE
00734 0000      FEXIT
00735 5726      JMP I      SGN
00736 6014      MNSONE, 60141010
00737 0000
00740 0000
00741 0000      PUTCH, 0
00742 3326      DCA      SGN

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22743	1326	TAD	SGN
22744	2027	PCCUNT, AND	0177
22745	1374	TAD	07763A
22746	7640	SZA CLA	
22747	5357	JMP	PNOCR
22750	1344	TAD	PCCUNT
22751	1126	TAD	COLUMN
22752	3237	DCA	NEXTVAR
22753	3126	DCA	COLUMN

/IS IT A C.R.

/NOPE.

/ADD IN EXTRA PLACES FOR GOOD LUCK.

/SAVE COLUMN POSITION

00754	1237	TAD	NEXTVAR	/REGET WHERE WE WERE.
00755	0376	AND	PUTXRA	/ARE WE INSERTING NULL CHARACTERS?
00756	7110	CLL RAR		/NOW DIVIDE BY 2.
00757	7170	PNOCR, CLL CML	CMA RAR	/AND NOW INVERT AND DIVIDE BY 2 AGAIN.
00760	3237	DCA	NEXTVAR	/SAVE FOR LATER USE. THIS IS NULL COUNTER.
00761	1326	TAD	SGN	/RECALL THE CHARACTER.
00762	0375	AND	0140A	
00763	7440	SZA		
00764	1365	TAD	07640A	
00765	7640	07640A, SZA CLA		
00766	2126	ISZ	COLUMN	
00767	1326	TAD	SGN	
00770	4777	JMS I	JPUTCH	
00771	2237	ISZ	NEXTVAR	/INCREMENT THE COUNTER
00772	5370	JMP	.+2	/GIVE NULLS UNTIL IT'S SATISFIED.
00773	5741	JMP I	PUTCH	
00774	7763	07763A, 7763		
00775	0140	0140A, 140		
00776	0000	PUTXRA, 1		/NULL AFTER C,R, WORD.
00777	7000	JPUTCH, PUTER		

1000

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01000	4603	START, JMS I	XRESTA	/REST FLAGS AND DEVICES.
01001	5602	JMP I	.+1	
01002	2440	SCRATCH		
01003	7407	XRESTA, ISET		
01004	0000	EVAL, 0		
01005	4177	JMS	GETWD	
01006	1204	TAD	EVAL	
01007	4504	EVALGO, JMS I	PPUSH	
01010	1363	TAD	04014	
01011	4504	JMS I	PPUSH	
01012	5216	JMP	GETOPR+1	
01013	1364	ISUMIN, TAD	04213	
01014	4504	JMS I	PPUSH	
01015	4177	GETOPR, JMS	GETWD	
01016	4566	ISIT		/'-'
01017	3577	3577		
01020	7410	SKP		
01021	5213	JMP	ISUMIN	
01022	4566	ISIT		/'+'
01023	3600	3600		
01024	7410	SKP		
01025	5215	JMP	GETOPR	

```

01026 4566      ISIT      /'(
01027 3755      3755
01030 5235      JMP      NOPAREN /NO
01031 4224      JMS      EVAL
01032 4570      MUSTBE    /')'
01033 3761      3761
01034 5507      JMP I     PGOTOPR
01035 4566      NOPAREN, ISIT /A VARIABLE
01036 7000      7000
01037 5305      JMP      NOTVAR /NO
01040 3276      DCA      ONESS
01041 3277      DCA      TWOSS
01042 1050      TAD      WORD
01043 3275      DCA      WDTMP
01044 4567      GET+ISIT  /'(
01045 3755      3755
01046 5274      JMP      GOTSS /NO
01047 1275      TAD      WDTMP
01050 4504      JMS I     PPUSH
01051 4204      JMS      EVAL
01052 4566      ISIT      /',
01053 3763      3763
01054 5264      JMP      ONEDIM
01055 4506      JMS I     PFIX
01056 4504      JMS I     PPUSH
01057 4204      JMS      EVAL
01060 4506      JMS I     PFIX
01061 3277      DCA      TWOSS
01062 4505      JMS I     PPOP
01063 5266      JMP      .+3
01064 3277      ONEDIM, DCA TWOSS
01065 4506      JMS I     PFIX
01066 3276      DCA      ONESS
01067 4570      MUSTBE    /')'
01070 3761      3761
01071 4505      JMS I     PPOP
01072 3275      DCA      WDTMP
01073 4177      JMS      GETWD
01074 4502      GOTSS, JMS I PGETADDR
01075 0000      WDTMP, 0
01076 0000      ONESS, 0
01077 0000      TWOSS, 0
01100 4435      FENTER
01101 3467      FLDI      ADDRESS
01102 0000      FEXIT
01103 5704      JMP I     .+1
01104 1203      OPDONE
01105 4575      NOTVAR, JMS I PISITLIT /ISIT A LITERAL
01106 5310      JMP      ISITFUN /NO
01107 5507      JMP I     PGOTOPR /IT IS IN THE AC NOW
01110 1450      ISITFUN, TAD I
01111 1362      TAD      03754 /-4024, WHICH IS BEGINNING OF FUNCTIONS.
01112 7510      SPA      /IS IT A LEGAL FUNCTION?
01113 5500      JMP I     PSXERR /NO, EXIT WITH MESSAGE.
01114 7450      SNA      /WAS IT 'FN'

```

01115	4177	JMS	GETWD	/YES, SKIP OVER LETTER
01116	4504	JMS	I PPUSH	
01117	4571	GET+MUSTBE		/'('
01122	3755	3755		
01121	4204	JMS	EVAL	
01122	4505	JMS	I PPOP	
01123	1330	TAD	FJUMP	
01124	3325	DCA	.+1	
01125	7402	HLT		
01126	5727	JMP	I .+1	
01127	1200	FNEXIT		
01130	4731	FJUMP,	JMS I FUNTAB	
01131	5453	FUNTAB,	FN	
01132	5616	COS		
01133	5600	TAN		
01134	6200	ATN		
01135	6114	LOG		
01136	6000	EXP		
01137	5412	SQR		
01140	6425	ABS		
01141	0726	SIN		
01142	6434	INT		
01143	5353	RND		
01144	5624	SIN		
01145	1761	PUTJ		/POINTER TO PUT CHAR ROUTINE,
01146	6441	SXERR		/FOR THE MISC. FUNCTIONS.
01147	6441	SXERR		
01150	6441	SXERR		
01151	1770	GETJ		/GET A CHAR FROM THE TTY.
		IFNZRO	MACHINE<	
		ADC		/"NORMAL" A-D CONVERSION RETURN.
		TST		/"TEST CHARACTER BUFFER".
		TIM		/TIME (# OF CLOCK TICKS).
		IFZERO	MACHINE<	
01152	6441	SXERR		
01153	7421	TST		
01154	6441	SXERR		
01155	5547	TAB		/TAB FUNCTION IS IMPLEMENTED.
01156	6441	SXERR		/UNIMPLEMENTED USER FUNCTION.
		IFNZRO	MACHINE<	
		CLS		/GET STATUS OF LAST TICK.

01115	4177	JMS	GETWD	/YES,SKIP OVER LETTER
01116	4504	JMS I	PPUSH	
01117	4571	GET+MUSTBE		/'('
01122	3755	3755		
01121	4204	JMS	EVAL	
01122	4505	JMS I	PPOP	
01123	1330	TAD	FJUMP	
01124	3325	DCA	.+1	
01125	7402	HLT		
01126	5727	JMP I	.+1	
01127	1200	FNEXIT		
01130	4731	FJUMP, JMS I	FUNTAB	
01131	5453	FUNTAB, FN		
01132	5616	COS		
01133	5600	TAN		
01134	6200	ATN		
01135	6114	LOG		
01136	6000	EXP		
01137	5412	SQR		
01140	6425	ABS		
01141	0726	STN		
01142	6434	INT		
01143	5353	RND		
01144	5624	SIN		
01145	1761	PUTJ		/POINTER TO PUT CHAR ROUTINE.
01146	6441	SXERR		/FOR THE MISC. FUNCTIONS.
01147	6441	SXERR		
01150	6441	SXERR		
01151	1770	GETJ		/GET A CHAR FROM THE TTY.
		IFNZRO	MACHINE<	
		ADC		/"NORMAL" A=D CONVERSION RETURN.
		TST		/"TEST CHARACTER BUFFER".
		TIM		/TIME (# OF CLOCK TICKS).
		IFZERO	MACHINE<	
01152	6441	SXERR		
01153	7421	TST		
01154	6441	SXERR		
01155	5547	TAB		/TAB FUNCTION IS IMPLEMENTED.
01156	6441	SXERR		/UNIMPLEMENTED USER FUNCTION.
		IFNZRO	MACHINE<	
		CLS		/GET STATUS OF LAST TICK.

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01200 4570 FNEXIT, MUSTBE /'')'
01201 3761
01202 4177 GOTOPR, JMS GETWD
01203 4505 OPDONE, JMS I PPOP
01204 3066 OCA OLOOP
01205 1450 TAD I WORD
01206 0272 AND 0700
01207 7650 SNA CLA
01210 5220 JMP ITSOP
01211 1450 TAD I WORD
01212 0275 AND 07077
01213 1273 TAD 03755
01214 7100 CLL
01215 1366 TAD 023
01216 7620 SNL CLA
01217 5500 JMP I PSXERR
01220 1066 ITSOP, TAD OLOOP
01221 0272 AND 0700
01222 3271 OCA OTEMP
01223 1450 TAD I WORD
01224 0272 AND 0700
01225 7041 CIA
01226 1271 TAD OTEMP
01227 7700 SMA CLA
01230 5247 JMP DOITNOW
01231 1066 TAD OLOOP
01232 4504 JMS I PPUSH
01233 4435 FENTER
01234 2073 FST OPERAND
01235 0000 FEXIT
01236 1073 TAD OPERAND
01237 4504 JMS I PPUSH
01240 1074 TAD OPERAND+1
01241 4504 JMS I PPUSH
01242 1075 TAD OPERAND+2
01243 4504 JMS I PPUSH
01244 1450 TAD I WORD
01245 4504 JMS I PPUSH
01246 5511 JMP I PGETOPR
01247 1066 DOITNOW, TAD OLOOP
01250 0070 AND 077
01251 1274 TAD 07764A
01252 7450 SNA
01253 5363 JMP UOOPER

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01254	7021	IAC	
01255	7650	SNA CLA	
01256	5321	JMP	UMOPER
01257	1266	TAD	OLDOP
01262	2270	AND	077
01261	1276	TAD	OJUMP
01262	3271	DCA	OTEMP
01263	4505	JMS I	PPDP
01264	3075	DCA	OPERAND+2
01265	4505	JMS I	PPDP
01266	3074	DCA	OPERAND+1
01267	4505	JMS I	PPDP
01270	3073	DCA	OPERAND
01271	7402	OTEMP, HLT	
01272	0700	0700,	700
01273	3755	03755,	3755
01274	7764	07764A,	7764
01275	7077	07077,	7077
01276	5677	OJUMP, JMP I	.+1
01277	1312	PLUS	
01300	1316	MINUS	
01301	1327	STAR	
01302	1332	SLASH	
01303	5740	UPARRX	/OR 'UPARROW' IF NO EXTENDED PMS
01304	1342	RELATE	
01305	1342	RELATE	
01306	1342	RELATE	
01307	1342	RELATE	
01310	1342	RELATE	
01311	1342	RELATE	
01312	4435	PLUS, FENTER	
01313	4073	FAO	OPERAND
01314	0000	FAEXT, FEXIT	
01315	5203	JMP	OPDONE
01316	4435	MINUS, FENTER	
01317	5073	FSS	OPERAND
01320	0000	FEXIT	
01321	1020	UMOPER, TAD	AC1
01322	7640	SZA CLA	
01323	7330	CLA CLL	CML RAR
01324	1024	TAD	ACS
01325	3024	DCA	ACS /DIRECT REF TO FLOATING AC
01326	5203	JMP	OPDONE
01327	4435	STAR, FENTER	
01330	6073	FMP	OPERAND
01331	1615	FJMP+BKWD+,-FAEXT	
01332	4435	SLASH, FENTER	
01333	2204	FST+FWD+SLSHTMP=.	
01334	3073	FLD	OPERAND
01335	7202	FOV+FWD+SLSHTMP=.	
01336	1622	FJMP+BKWD+,-FAEXT	
01337	0000	SLSHTMP,01010	
01340	0000		
01341	0000		
01342	1066	RELATE, TAD	OLDOP

01343	1367	TAD	CONST	
01344	3353	DCA	THESKIP	
01345	6201	COF	0	/***** 8 K INSERT.
01346	1753	TAD I	THESKIP	
01347	6211	COF	10	/***** 8 K INSERT.
01350	3353	DCA	THESKIP	
01351	4435	FENTER		
01352	5073	FS0	OPERAND	
01353	7402	THESKIP, HLT		
01354	1204	FJMP+FWD+4		
01355	3151	FLD	ONE	
01356	0000	FEXIT		
01357	5203	JMP	OPDONE	
01360	3152	FLD	ZERO	
01361	0000	FEXIT		
01362	5203	JMP	OPDONE	
01363	4503	UDOPER, JMS I	PPOP	
01364	3066	DCA	OLOOP	
01365	5466	JMP I	OLOOP	
01366	0023	023,	23	
01367	5263	CONST,	,=4104	
01370	0050	FSEQ	/	8
01371	0140	FSGT	/	4
01372	0110	FSLT	/	2
01373	0100	FSGE	/	4*
01374	0150	FSLE	/	2*
01375	0040	FSNE	/	4*

1400

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01400	0000	GETADDR, 0		
01401	6201	COF	0	/***** 8 K INSERT.
01402	1600	TAD I	GETADDR	
01403	3014	DCA	INDEX2	
01404	2200	ISZ	GETADDR	
01405	1600	TAD I	GETADDR	
01406	3362	DCA	GSS1	
01407	2200	ISZ	GETADDR	
01410	1600	TAD I	GETADDR	

01411	3363	DCA	GSS2
01412	2200	ISZ	GETADOR
01413	0211	CDF	10
01414	1414	TAD I	INDEX2
01415	3067	DCA	ADDRESS
01416	2067	ISZ	ADDRESS
01417	1362	TAD	GSS1
01420	7650	SNA CLA	
01421	5260	JMP	NOSS1
01422	1414	TAD I	INDEX2
01423	7450	SNA	
01424	5261	JMP	ALLOC
01425	7140	CLL CMA	
01426	1362	TAD	GSS1
01427	7630	SZL CLA	
01430	5370	JMP	SSERR
01431	1414	TAD I	INDEX2
01432	3364	DCA	GDIM2
01433	1363	TAD	GSS2
01434	7450	SNA	
01435	5253	JMP	NOSS2
01436	7141	CLL CIA	
01437	1364	TAD	GDIM2
01440	7620	SNL CLA	
01441	5370	JMP	SSERR
01442	1362	TAD	GSS1
01443	7041	CIA	
01444	3362	DCA	GSS1
01445	7410	SKP	
01446	1364	TAD	GDIM2
01447	2362	ISZ	GSS1
01450	5246	JMP	,=2
01451	1363	TAD	GSS2
01452	3362	DCA	GSS1
01453	1362	TAD	GSS1
01454	7104	CLL RAL	
01455	1362	TAD	GSS1
01456	1067	TAD	ADDRESS
01457	3067	DCA	ADDRESS
01460	5600	JMP I	GETADDR
01461	2034	ISZ	DIMFLAG
01462	7410	SKP	
01463	9273	JMP	ISDIM
01464	3034	DCA	DIMFLAG
01465	1363	TAD	GSS2
01466	7640	SZA CLA	
01467	1367	TAD	013
01470	3363	DCA	GSS2
01471	1367	TAD	013
01472	3362	DCA	GSS1
01473	1363	TAD	GSS2
01474	7450	SNA	
01475	7201	CLA IAC	
01476	7041	CIA	
01477	3364	DCA	GDIM2

////////// 8 K INSERT.

NOSS2,

NOSS1,
ALLOC,

ISDIM,

01500	2134	ISZ	NOINT
01501	7301	CLA CLL	IAC
01502	1362	TAD	GSS1
01503	7430	SZL	
01504	5765	JMP I	PSPACERR
01505	2364	ISZ	GDIM2
01506	5302	JMP	,=4
01507	3364	DCA	GDIM2
01510	1364	TAD	GDIM2
01511	7124	CLL CML	RAL
01512	7420	SNL	
01513	1364	TAD	GDIM2
01514	3364	DCA	GDIM2
01515	1364	TAD	GDIM2
01516	7430	SZL	
01517	5765	JMP I	PSPACERR
01520	4544	JMS I	SPLEFT
01521	7410	SKP	
01522	5765	JMP I	PSPACERR
01523	7344	CLA CLL	CMA RAL
01524	1014	TAD	INDEX2
01525	3014	DCA	INDEX2
01526	1003	TAD	ARRLOC
01527	3414	DCA I	INDEX2
01530	1362	TAD	GSS1
01531	3414	DCA I	INDEX2
01532	1363	TAD	GSS2
01533	3414	DCA I	INDEX2
01534	7240	CLA CMA	
01535	1067	TAD	ADDRESS
01536	3067	DCA	ADDRESS
01537	1366	TAD	07774
01540	3363	DCA	GSS2
01541	1467	TAD I	ADDRESS
01542	2067	ISZ	ADDRESS
01543	4521	JMS I	PSTICKIT
01544	2363	ISZ	GSS2
01545	5341	JMP	,=4
01546	1364	TAD	GDIM2
01547	7041	CIA	
01550	1160	TAD	04
01551	3364	DCA	GDIM2
01552	4521	JMS I	PSTICKIT
01553	2364	ISZ	GDIM2
01554	5352	JMP	,=2
01555	7346	CLA CLL	CMA RTL
01556	1200	TAD	GETADDR
01557	3200	DCA	GETADDR
01560	4543	JMS I	CNCLR
01561	5201	JMP	GETADDR+1
01562	0000	GSS1,	0
01563	0000	GSS2,	0
01564	0000	GDIM2,	0
01565	0370	PSPACER,SPACERR	
01566	7774	07774,	7774

/FORBID INTERRUPTS NOW.

/CHECK FOR CONTRDL C.

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01567 0013 013, 13 / (12) IF 1 ORG INDEXING
01570 0477 SSERR, JMS I PERROR
01571 2325 TEXT 'SUBSCRIPT'
01572 0223
01573 0322
01574 1120
01575 2400

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01576 1052 DEF, TAD LINENO
01577 3013 DCA INDEX1
01600 1413 TAD I INDEX1
01601 3220 DCA USERFN
01602 4571 GET+MUSTBE /'FN'
01603 3754 3754
01604 4571 GET+MUSTBE /A VARIABLE
01605 7000 7000
01606 4571 GET+MUSTBE /'('
01607 3755 3755
01610 4571 GET+MUSTBE /A VARIABLE
01611 7000 7000
01612 4571 GET+MUSTBE /')'
01613 3761 3761
01614 4571 GET+MUSTBE /'.'
01615 3673 3673
01616 5617 JMP I PSKIPIT
01617 0467 PSKIPIT, SKIPIT
01620 0000 USERFN, 0
01621 4570 MORERD, MUSTBE /', '
01622 3763 3763
01623 4513 READ, JMS I PGETVAR
01624 7240 CLA CMA
01625 1045 TAD LOCCTR
01626 3273 DCA LOCTMP
01627 1046 TAD READLOC
01630 3045 DCA LOCCTR
01631 4567 GET+ISIT / (CR) OR '\ '
01632 2000 2000
01633 7410 SKP
01634 5260 JMP SEARCH
01635 4566 ISIT /A LINENO
01636 0000 0000
01637 7410 SKP
01640 5260 JMP SEARCH
01641 4566 ISIT /', '
01642 3763 3763
01643 5267 JMP DATAERR
01644 4501 ISSOME, JMS I PEVAL
01645 7240 CLA CMA
01646 1045 TAD LOCCTR
01647 3046 DCA READLOC
01650 1273 TAD LOCTMP

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01651	3045	DCA	LOCCTR	
01652	4512	JMS I	PSTOVAR	
01653	4567	GET+ISIT		/(CR) OR '\'
01654	2000	2000		
01655	5221	JMP	MORERD	
01656	5503	JMP I	PEXECUTE	
01657	4177	SCHMOR, JMS	GETWO	
01660	4566	SEARCH, ISIT		/'DATA'
01661	1757	1757		
01662	7410	SKP		
01663	5244	JMP	ISSOME	
01664	4566	ISIT		/(EOF)
01665	1755	1755		
01666	5257	JMP	SCHMOR	
01667	4477	DATAERR, JMS I	PERROR	
01670	0401	TEXT	'DATA'	
01671	2401			
01672	0000			
01673	0000	LOCTMP, 0		
01674	0000	GETBLK, 0		
01675	4563	JMS I	PCHKFIT	
01676	1004	TAD	CODELOC	
01677	3045	OCA	LOCCTR	
01700	1004	TAD	CODELOC	
01701	1356	TAD	ABCDEF	
01702	3004	OCA	CODELOC	
01703	1004	TAO	CODELOC	
01704	3357	OCA	BCDEFG	
01705	1005	TAD	PSYMTAB	/UPDATE SYMBOL TABLE NOW.
01706	1356	TAD	ABCDEF	/BY ADDING IN CORRECTION FACTOR.
01707	3005	OCA	PSYMTAB	
01710	1445	GTBKLP, TAD I	LOCCTR	/MOVE TEXT NOW.
01711	2045	ISZ	LOCCTR	
01712	3757	DCA I	BCDEFG	
01713	2357	ISZ	BCDEFG	
01714	1357	TAD	BCDEFG	/NOW CHECK FOR END.
01715	7041	CIA		
01716	1005	TAD	PSYMTAB	
01717	7640	SZA CLA		
01720	5310	JMP	GTBKLP	
01721	7240	CLA CMA		
01722	1006	TAD	NSYMTAB	
01723	3006	OCA	NSYMTAB	
01724	1165	TAD	GSBPTR	
01725	7040	CMA		
01726	1164	TAD	PGOLIST	
01727	3357	OCA	BCDEFG	
01730	1164	TAD	PGOLIST	
01731	3050	DCA	WORD	
01732	1356	TAD	ABCDEF	
01733	1450	TAO I	WORD	
01734	3450	DCA I	WORD	
01735	2050	ISZ	WORD	

01736	2357	ISZ	BCDEFG
01737	5332	JMP	,=5
01740	1263	TAD	FORCT
01741	3357	DCA	BCDEFG
01742	1360	TAD	PPFORLI
01743	3050	DCA	WORD
01744	5352	JMP	,+6
01745	1356	TAD	ABCOEF
01746	1450	TAD I	WORD
01747	3450	DCA I	WORD
01750	2050	ISZ	WORD
01751	2050	ISZ	WORD
01752	2357	ISZ	BCDEFG
01753	5345	JMP	,=6
01754	1005	TAD	PSYMTAB
01755	5674	JMP I	GETBLK
01756	7774	ABCOEF, -4	
01757	0000	BCDEFG, 0	
01760	7706	PPFORLI, FORLIST+1	
01761	0000	PUTJ, 0	
01762	4506	JMS I	PFIX
01763	7200	CLA	
01764	1016	TAD	AC3
01765	4433	JMS I	PPUTCH
01766	4546	JMS I	PANORM
01767	5761	JMP I	PUTJ

01770	0000	GETJ, 0	
01771	4776	JMS I	PBEGFIX
01772	4432	JMS I	PGETCH
01773	3016	DCA	AC3
01774	4546	JMS I	PANORM
01775	5770	JMP I	GETJ
01776	3762	PBEGFIX, BEGFIX	

/GETS A CHARACTER FROM THE TTY.
 /CLEAN UP THE FAC
 /FECTH A CHAR.
 /SAVE IT, BABY!
 /AND NORMALIZE AC.
 /AND RETURN NOW.

2000

PAGE

02000	2134	NOTNOW, ISZ	NOINT
02001	2050	ISZ	WORD
02002	1450	TAD I	WORD
02003	7450	SNA	
02004	5232	JMP	INSERT

/RESET "C SWITCH SO NO INTERRUPT NOW.

22225	3371		DCA	LOWLOC
22226	3450		DCA I	WORD
22227	1371		TAD	LOWLOC
22212	3045		DCA	LOCCTR
22211	4510		JMS I	PPASSCR
22212	1371	MOVE,	TAD	LOWLOC
22213	7041		CIA	
22214	1004		TAD	CODELOC
22215	7650		SNA CLA	
22216	5230		JMP	INSRTS
22217	7340		CLA CLL	CMA
22220	1371		TAD	LOWLOC
22221	3371		OCA	LOWLOC
22222	7340		CLA CLL	CMA
22223	1045		TAD	LOCCTR
22224	3045		DCA	LOCCTR
22225	1771		TAD I	LOWLOC
22226	3445		DCA I	LOCCTR
22227	5212		JMP	MOVE
22230	1045	INSRTS,	TAD	LOCCTR
22231	3004		DCA	CODELOC
22232	1057	INSERT,	TAD	FPTR
22233	1040		TAD	MLINBUF
22234	7040		CMA	
22235	3057		DCA	FPTR
22236	7326		CLA CLL	CML RTL
22237	1057		TAD	FPTR
22240	7450		SNA	
22241	5313		JMP	FIXLIN
22242	7040		CMA	
22243	4563		JMS I	PCHKFIT
22244	1004		TAD	CODELOC
22245	3045		DCA	LOCCTR
22246	1437		TAD I	PLINBUF
22247	7001		IAC	
22250	3013		DCA	INDEX1
22251	1413		TAD I	INDEX1
22252	3073		DCA	OPERAND
22253	1413		TAD I	INDEX1
22254	3074		DCA	OPERAND+1
22255	4336		JMS	COMPARE
22256	5261		JMP	NOTFRST
22257	4361		JMS	SUBRA
22260	5303		JMP	TRANSF
22261	4510	NOTFRST,	JMS I	PPASSCR
22262	4336		JMS	COMPAR
22263	5261		JMP	NOTFRST
22264	1045		TAD	LOCCTR
22265	3360		DCA	LSTLOC
22266	1004		TAD	CODELOC
22267	3045		DCA	LOCCTR
22270	4361		JMS	SUBRA
22271	4177		JMS	GETWO
22272	1050	MOVLUP,	TAD	WORD
22273	3772		DCA I	PUTLOC

02074	2372		ISZ	PUTLOC
02075	4177		JMS	GETWD
02076	1360		TAD	LSTLOC
02077	7041		CIA	
02100	1045		TAD	LOCCTR
02101	7640		SZA	CLA
02102	5272		JMP	MOVLUP
02103	1037	TRANSF,	TAD	PLINBUF
02104	3060		DCA	GPTR
02105	1460	TRALUP,	TAD I	GPTR
02106	2060		ISZ	GPTR
02107	3772		DCA I	PUTLOC
02110	2372		ISZ	PUTLOC
02111	2057		ISZ	FPTR
02112	5305		JMP	TRALUP
02113	4561	FIXLIN,	JMS I	PLINFIX
02114	5520		JMP I	PEDIT

02115 0000 IGNORE, 0

/THIS ROUTINE LOOKS FOR A "\ " OR A C.R.


```

02116 4567      GET+ISIT
02117 5000      5000      /TEXT?
02120 5327      JMP      NOTBAD      /NOPE.
02121 4177      JMS      GETWD
02122 1050      TAD      WORD
02123 0070      AND      077
02124 7640      SZA CLA      /END OF TEXT?
02125 5321      JMP      ,=4      /NOPE.
02126 5316      JMP      IGNORE+1      /YEP. GET NEXT ITEM.

02127 4575 NOTBAD, JMS I  PISITLIT      /IS IT A LITERAL?
02130 7410      SKP
02131 5316      JMP      IGNORE+1      /YES.
02132 4566      ISIT
02133 2000      2000      /"\" OR C.R.
02134 5316      JMP      IGNORE+1      / N O
02135 5715      JMP I  IGNORE      /YES. RETURN TO CALLER.

```

```

02136 0000 COMPARE, 0
02137 4567      GET+ISIT      /A LINENO
02140 0000      0000
02141 5356      JMP      IAMLESS
02142 1050      TAD      WORD
02143 7001      IAC
02144 3013      DCA      INDEX1
02145 1413      TAD I  INDEX1
02146 7141      CLL CIA
02147 1073      TAD      OPERAND
02150 7640      SZA CLA
02151 5355      JMP      FRSTNE
02152 1413      TAD I  INDEX1
02153 7141      CLL CIA
02154 1074      TAD      OPERAND+1
02155 7620 FRSTNE, SNL CLA      /IS OPERAND<THIS LINENO
02156 2336 IAMLESS, ISZ      COMPARE /YES
02157 5736      JMP I  COMPARE
02160 0000 LSTLOC, 0
02161 0000 SUBRA, 0
02162 1057      TAD      FPTR
02163 7100      CLL
02164 1004      TAD      CODELOC
02165 3004      DCA      CODELOC
02166 1004      TAD      CODELOC
02167 3372      DCA      PUTLOC
02170 5761      JMP I  SUBRA
02171 0000 LOWLOC, 0
02172 0000 PUTLOC, 0

```

```

02173 4177 PRINT, JMS GETWD
02174 7346 CLA CLL CMA RTL
02175 1131 TAD OUTDEV
02176 1131 TAD OUTDEV
02177 1131 TAD OUTDEV
02200 1301 TAD 0110
02201 3357 DCA TWIDTH

```

/THIS INSTRUCTION MAY BE COMBINED WITH THE GET INSTRUCTION BEL
/7775==3 FOR DEVICE CHECK.
/MULTIPLY DEVICE BY 3.

/SO THAT LPT=6, PTP=3, AND TTY=0.
/NOW ADD IN 72. THUS TTY=72, LPT=60.
/AND SAVE FOR FUTURE USE.

```

02202 4566 ISIT
02203 3763 3763
02204 5207 JMP PRINTC
02205 5277 JMP PRINBLK

```

/CHECK FOR FIRST COMMA, ONCE ONLY CHECK.

/NO. CONTINUE CHECKING.
/YEP. GIVE BLANK, THEN TAB OVER.

```

02206 4177 PRINTG, JMS GETWD
02207 3345 PRINTC, DCA TABFLG
02210 4566 ISIT
02211 2000 2000
02212 5216 JMP NOPCR
02213 4514 JMS I PPRINTXT
02214 6531 CRLF
02215 5503 JMP I PEXECUTE

```

/GET NEXT ELEMENT AFTER A TEXT ELEMENT.

/RESET TAB INDICATOR.
/CHECK TO SEE IF CARRIAGE RETURN.

/NOT A CARRIAGE RETURN. CONTINUE CHECKING.

```

02216 4566 NOPCR, ISIT
02217 3763 3763
02220 5316 JMP PRENT
02221 5303 JMP PRINCOM

```

/IS IT A COMMA (" , ")

/NO. FINISH CHECKING BELOW.
/IT IS. PROCESS THE COMMA NOW.

```

02222 4566 PRINTHS, ISIT
02223 5000 5000
02224 5236 JMP NOTTXT
02225 4177 PRINQUO, JMS GETWD
02226 1050 TAD WORD
02227 7012 RTR
02228 7012 RTR
02231 7012 RTR
02232 4260 JMS PRINHAF
02233 1050 TAD WORD
02234 4260 JMS PRINHAF
02235 5225 JMP PRINQUO
02236 1241 NOTTXT, TAD PPRINRET
02237 5040 JMP I PEVALGO
02240 1007 PEVALGO, EVALGO
02241 2242 PPRINRE, PRINRET
02242 1345 PRINRET, TAD TABFLG

```

/TEXT

/WAS THERE A TAB PRESENT?

02243	7640	SZA	CLA		
02244	5762	JMP	I	TABTHR	/YEP, EXECUTE TAB CORRECTOR.
02245	1360	TAD		014	/SEE IF ROOM FOR 13 PLACES(1+12).
02246	4346	JMS		CHECKW	
02247	1024	TAD		ACS	
02250	7710	SPA	CLA		
02251	5254	JMP		.+3	
02252	1051	TAD		0240	
02253	4433	JMS	I	PPUTCH	
02254	4517	JMS	I	POUTNUM	
02255	1051	TAD		0240	
02256	4433	JMS	I	PPUTCH	
02257	5207	JMP		PRINTC	/GO BACK AND GET NEXT.
02260	0000	PRINHAF,	0		
02261	0070	AND		077	
02262	7450	SNA			
02263	5206	JMP		PRINTG	/GO SKIP PAST TEXT ELEMENT AND CHECK NEXT.
02264	1326	TAD		007736	
02265	7450	SNA			
02266	5660	JMP	I	PRINHAF	
02267	1062	TAD		02	
02270	0070	AND		077	
02271	1051	TAD		0240	
02272	3024	DCA		ACS	/SAVE CHARACTER FOR A SECOND.
02273	4346	JMS		CHECKW	/CHECK TO SEE IF IT'LL FIT ON THE LINE.
02274	1024	TAD		ACS	/RESTORE THE CHARACTER.
02275	4433	JMS	I	PPUTCH	
02276	5660	JMP	I	PRINHAF	
02277	7200	PRINBLK,CLA			/MAKE SURE AC IS ZERO.
02300	1051	TAD		0240	
02301	4433	JMS	I	PPUTCH	
02302	4346	JMS		CHECKW	/CHECK TO SEE IF ROOM FOR ONE MORE.
02303	1126	PRINCOM,TAD		COLUMN	/SEE IF COLUMN ON COMMA BOUNDARY.
02304	7450	SNA			
02305	5312	JMP		PRINSEM	/YEP.
02306	1327	TAD		07762	/SUBTRACT A LITTLE AN CHECK AGAIN.
02307	7500	SNA			/TOO FAR?
02310	5304	JMP		.-4	/NOPE.
02311	5277	JMP		PRINBLK	/YEP, GIVE BLANK AND LOOP AGAIN.
02312	4567	PRINSEM,GET+ISIT			/(CR) OR '\'
02313	2000			2000	
02314	7410	SKP			
02315	5503	JMP	I	PEXECUTE/YES	
02316	4566	PRENT,	ISIT		/' '
02317	3762		3762		
02320	7410	SKP			
02321	5312	JMP		PRINSEM /YES	
02322	4566	ISIT			/' '
02323	3763		3763		
02324	5222	JMP		PRINTHS	
02325	5277	JMP		PRINBLK	
02326	7736	007736,	7736		
02327	7762	07762,	7762		

```

02330 0000 LINFIX, 0
02331 1004 TAD CODELOC
02332 3045 DCA LOCCTR
02333 4177 LFXLUP, JMS GETWD
02334 1450 TAD I WORD
02335 7640 SZA CLA /IS IT A LINENO
02336 5730 JMP I LINFIX /NO
02337 2050 ISZ WORD
02340 7240 CLA CMA
02341 1045 TAD LOCCTR
02342 3450 DCA I WORD
02343 4510 JMS I PPASSCR
02344 5333 JMP LFXLUP

```

```

02345 0000 TABFLG, 0 /TAB FOUND FLAG.

```

```

02346 0000 CHECKW, 0 /THIS ROUTINE CHECKS FOR LINE TOO LONG.
02347 1126 TAD COLUMN /GET WHERE AT NOW.
02350 7040 CMA /-WHEREAT=NOF PLACES IN OUT CHAR.
02351 1357 TAD TWIDTH /ADD IN WIDTH OF DEVICE.
02352 7700 SMA CLA /TOO BIG.
02353 5746 JMP I CHECKW /NAH, RETURN TO SENDER.
02354 4514 JMS I PPRINTXT /YEP, GIVE C.R.L.F.
02355 6531 CRLF
02356 5746 JMP I CHECKW /AND RETURN TO SENDER.

```

```

02357 0000 TWIDTH, 0 /0 IS OK SINCE IT'LL BE SET UP CORRECTLY.
02360 0014 014, 14 /MAGIC CONSTANT.
02361 0110 0110, 110 /WIDTH OF TTY PAPER.

```

```

02362 6350 TABTHR, TABDO /ROUTINE WHICH PROCESS TAB CHARACTER.

```

```

02363 0073 MENDPDL, -ENDPDL=1

```

```

02364 0000 PUSH, 0
02365 3436 DCA I PDL
02366 2036 ISZ PDL
02367 1036 TAD PDL
02370 1363 TAD MENDPDL
02371 7640 SZA CLA
02372 5764 JMP I PUSH
02373 4477 JMS I PERRDR
02374 0530 TEXT 'EXPRESSION'
02375 2022
02376 0523
02377 2311
02400 1716
02401 0000

```

02402	4541	EXIT,	JMS I	PCOWT	/WAIT FOR BUFFER TO EMPTY AND THEN CONTINUE.
02403	1007		TAD	0215	
02404	4433		JMS I	PPUTCH	
02405	1010	EDIT,	TAD	0212	
02406	4433		JMS I	PPUTCH	
02407	1130		TAD	OUTD2	/RESET DEVICE
02410	3131		DCA	OUTDEV	
02411	4543		JMS I	CNCLR	/CHECK TO SEE IF *C WAS TYPED.
02412	1362		TAD	PXXTHEN	
02413	4524		JMS I	PGETLIN	
02414	1437		TAD I	PLINBUF	
02415	3050		DCA	WORD	
02416	1450		TAD I	WORD	
02417	7650		SNA CLA		
02420	5766		JMP I	PNOTNOW	
02421	1010		TAD	0212	
02422	4433		JMS I	PPUTCH	
02423	1130		TAD	OUTD2	/RESET I/O DEVICE.
02424	3131		DCA	OUTDEV	
02425	4566		ISIT		/'RUN'
02426	3736		SKP		
02427	7410		SKP		
02430	5252		JMP	RUN	
02431	4566		ISIT		/'LIS'
02432	3737		3737		
02433	7410		SKP		
02434	5763		JMP I	PLIST	
02435	4566		ISIT		/'SCR'
02436	3735		3735		
02437	5254		JMP	IMMED	
02440	1365	SCRATCH,	TAD	PPERMSYM	
02441	3004		DCA	CODELOC	
02442	1364		TAD	PXXEOF	
02443	3765		DCA I	PPERMSYM	
02444	1365		TAD	PPERMSYM	
02445	7001		IAC		
02446	3005		DCA	PSYMTAB	
02447	7240		CLA CMA		
02450	3006		DCA	NSYMTAB	
02451	4537		JMS I	PRESET	/RESET DEVICES AFTER SCRATCH.
02452	4262	RUN,	JMS	CLEARV	
02453	5503		JMP I	PEXECUTE	
02454	1037	IMMED,	TAD	PLINBUF	

02455	3045	DCA	LOCCTR	
02456	1364	TAD	PXXEOP	
02457	3052	DCA	LINEND	
02460	5503	JMP I	PEXECUTE	
02461	7400	PJSET,	SETUP	
02462	0000	CLEARV,	0	
02463	4661	JMS I	PJSET	
02464	5303	JMP	RUNIN	
02465	1456	RUNLUP,	TAD I	EPTR
02466	1360		TAD	07000A
02467	7640	SZA	CLA	/IS IT A VARIABLE
02470	5277	JMP	RUNNOT	/NO
02471	2056	ISZ	EPTR	
02472	1456	TAD I	EPTR	
02473	3060	DCA	GPTR	

02474	1460	TAD I	GPTR	
02475	3456	OCA I	EPTR	
02476	7410	SKP		
02477	2056	RUNNOT, ISZ	EPTR	
02500	2056	ISZ	EPTR	
02501	2056	ISZ	EPTR	
02502	2056	ISZ	EPTR	
02503	2057	RUNIN, ISZ	FPTR	
02504	5265	JMP	RUNLUP	
02505	1361	TAD	PLIMIT	
02506	3003	OCA	ARRLOC	
02507	1005	TAD	PSYMTAB	
02510	3056	OCA	EPTR	
02511	1006	TAD	NSYMTAB	
02512	3057	OCA	FPTR	
02513	5343	JMP	RUN2IN	
02514	1456	RUN2LUP, TAD I	EPTR	
02515	1360	TAD	07000A	
02516	7640	SZA CLA	/IS IT A VARIABLE	
02517	5337	JMP	RUN2NOT /NO	
02520	2056	ISZ	EPTR	
02521	1456	TAD I	EPTR	
02522	3031	OCA	TMP	
02523	1003	TAD	ARRLOC	
02524	3456	OCA I	EPTR	
02525	1031	TAD	TMP	
02526	4521	JMS I	PSTICKIT	
02527	4521	JMS I	PSTICKIT	
02530	4521	JMS I	PSTICKIT	
02531	4521	JMS I	PSTICKIT	
02532	2056	ISZ	EPTR	
02533	3456	OCA I	EPTR	
02534	2056	ISZ	EPTR	
02535	3456	OCA I	EPTR	
02536	5342	JMP	.+4	
02537	2056	RUN2NOT, ISZ	EPTR	
02540	2056	ISZ	EPTR	
02541	2056	ISZ	EPTR	
02542	2056	ISZ	EPTR	
02543	2057	RUN2IN, ISZ	FPTR	
02544	5314	JMP	RUN2LUP	
02545	1004	TAD	COOELOC	
02546	3045	OCA	LOCCTR	
02547	1125	TAD	PPOLIST	
02550	3036	OCA	POL	
02551	1004	TAD	COOELOC	
02552	3046	OCA	READLOC	
02553	7240	CLA CMA		
02554	3063	OCA	FORCT	
02555	1164	TAD	PGOLIST	
02556	3165	OCA	GSBPTR	
02557	5662	JMP I	CLEARV	
02560	7000	07000A, 7000		
02561	0003	PLIMIT, LIMIT	/FIRST WORD OF USER AREA	
02562	7253	PXXTHEN, XXTHEN		

```

02563 3620 PLIST, LIST
02564 7502 PXXEOF, XEOF
02565 7222 PPERMSY, PERMSY
02566 2202 PNOTNOW, NOTNOW
02567 4262 END, JMS CLEARV
02570 4537 STOP, JMS I PRESET
02571 4541 JMS I PCOWT
02572 4514 JMS I PPRINTXT
02573 6525 READY
02574 5520 JMP I PEDIT

```

```

/RESET ALL DEVICES NOW,
/AND WAIT FOR I/O TO FINISH UP,
/AND GIVE THE STOP MESSAGE

```

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```

02600 4561 GETLRET, JMS I PLINFX
02601 4543 JMS I CNCLR
02602 5603 JMP I GETLIN
02603 8000 GETLIN, 0
02604 3064 DCA SNUMFLG
02605 1131 TAD OUTDEV
02606 3130 DCA OUTO2
02607 3131 DCA OUTDEV
02610 1172 NEWLIN, TAD PLBEGIN
02611 3256 DCA EPTR
02612 1370 TAD D40
02613 3456 DCA I EPTR
02614 2056 ISZ EPTR
02615 4432 NEWCHAR, JMS I PGETCH
02616 3456 DCA I EPTR
02617 7240 CLA CMA
02620 1127 TAD INDEV
02621 7600 SZA CLA
02622 5226 JMP .+4
02623 3133 DCA CNTLD
02624 7201 CLA IAC
02625 3131 DCA OUTDEV

```

```

/CHECK TO SEE IF *C WAS TYPED WHILE HERE,

```

```

/GET THE OUTPUT DEVICE,
/SAVE FOR A SECOND,
/TURN OFF THE OUTPUT DEVICE,

```

```

/CHECK THE INPUT DEVICE NOW,
/GET IT, BABY,
/IS IT THE TTY?
/NOPE,
/IT IS, RESET CONTROL 0,
/AND TEMPORARILY SET THE OUTPUT TO THE TTY.

```



```

02626 1456      TAD I  EPTR
02627 1374      TAD    07603
02630 7450      SNA          /IS IT ALT-MODE (175)
02631 5263      JMP    ALTMODE /YES
02632 1367      TAD    036
02633 7450      SNA          /IS IT '1'
02634 5266      JMP    BARROW /YES
02635 1371      TAD    0122
02636 7450      SNA          /IS IT (CAR. RET.)
02637 5300      JMP    CARRET /YES
02640 1375      TAD    07715
02641 7450      SNA          /IS IT '0'
02642 5215      JMP    NEWCHAR /YES
02643 0372      AND    0140B
02644 7440      SZA
02645 1363      TAD    07640B
02646 7640      SZA CLA      /IS IT A PRINTABLE CHARACTER
02647 5215      JMP    NEWCHAR /NO
02650 1456      TAD I  EPTR
02651 4433      JMS I  PPUTCH
02652 1056      TAD    EPTR
02653 2056      ISZ    EPTR
02654 1174      TAD    MLEND
02655 7640      SZA CLA
02656 5215      JMP    NEWCHAR
02657 4537      TUBIG, JMS I  PRESET      /RESET ALL DEVICES NOW,
02660 4514      JMS I  PPRINTXT      /AND GIVE THE ERROR MESSAGES.
02661 5162      TOOLONG
02662 5210      JMP    NEWLIN
02663 4514      ALTMODE, JMS I  PPRINTXT
02664 6501      DELETED
02665 5210      JMP    NEWLIN
02666 1056      BARROW, TAD    EPTR
02667 1173      TAD    MLBEGIN
02670 7650      SNA CLA
02671 5215      JMP    NEWCHAR
02672 7240      CLA CMA
02673 1056      TAD    EPTR
02674 3056      DCA    EPTR
02675 1373      TAD    03737B
02676 4433      JMS I  PPUTCH
02677 5215      JMP    NEWCHAR
02700 1007      CARRET, TAD    0215
02701 4433      JMS I  PPUTCH
02702 2134      ISZ    NOINT      /SET FLAG TO PREVENT INTERRUPTS AS OF NOW.
02703 1172      TAD    PLBEGIN /EPTR=BEGINNING OF STRING
02704 3056      DCA    EPTR      /FPTR=WHERE TRANSLATED SYMBOL GOES
02705 1037      TAD    PLINBUF /GPTR=CHAR IN STRING(.GE, EPTR)
02706 3057      DCA    FPTR      /HPTR=POSITION IN TABLE
02707 1377      SLOOP, TAD    PTABLE
02710 3061      DCA    HPTR
02711 1056      GLOOP, TAD    EPTR
02712 3060      DCA    GPTR
02713 1461      TAD I  HPTR
02714 7650      SNA CLA

```

02715	5776	JMP I	POTHER
02716	1361	TAD	HPTR
02717	3050	DCA	WORD
02722	2261	ISZ	HPTR
02721	3024	DCA	ACS
02722	1460	TAD I	GPTR
02723	1054	TAD	07740
02724	7640	SZA CLA	
02725	5330	JMP	BSKIP
02726	2060	ISZ	GPTR
02727	5322	JMP	HLOOP
02730	7330	BSKIP, CLA CLL	CML RAR
02731	1024	TAD	ACS
02732	3024	DCA	ACS
02733	1461	TAD I	HPTR
02734	7430	SZL	
02735	2061	ISZ	HPTR
02736	7430	SZL	
02737	5343	JMP	.+4
02740	7012	RTR	
02741	7012	RTR	
02742	7012	RTR	
02743	0070	AND	077
02744	7450	SNA	
02745	5766	JMP I	JMATCH
02746	1054	TAD	07740
02747	7450	SNA	
02750	5330	JMP	BSKIP
02751	0070	AND	077
02752	1370	TAD	040
02753	7041	CIA	
02754	1460	TAD I	GPTR
02755	2060	ISZ	GPTR
02756	7650	SNA CLA	
02757	5322	JMP	HLOOP
02760	1461	TAD I	HPTR
02761	0070	AND	077
02762	2061	ISZ	HPTR
02763	7640	07640B, SZA CLA	
02764	5360	JMP	.-4
02765	5311	JMP	GLOOP
02766	6506	JMATCH, AMATCH	
02767	0036	036,	36
02770	0040	040,	40
02771	0122	0122,	122
02772	0140	0140B,	140
02773	3737	03737B,	3737
02774	7603	07603,	7603
02775	7715	07715,	7715
02776	3000	POTHER,	OTHER
02777	7023	PTABLE,	XXPLUS

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03000	4310	OTHER,	JMS	NONBLNK
03001	1321		TAD	07763B
03002	7440		SZA	
03003	5223		JMP	NOTCR
03004	1325		TAD	PXXCRLF
03005	3457		DCA I	FPTR
03006	1257		TAD	FPTR
03007	3013		DCA	INDEX1
03010	1326		TAD	PXXEXIT
03011	3413		DCA I	INDEX1
03012	1013		TAD	INDEX1
03013	1041		TAD	MENDLIN
03014	7450		SNA	
03015	5622		JMP I	PGETLRET
03016	7710		SPA CLA	
03017	5210		JMP	.-7
03020	5621		JMP I	PTUBIG
03021	2657	PTUBIG,	TUBIG	
03022	2600	PGETLRE,	GETLRET	
03023	1322	NOTCR,	TAD	07737
03024	7450		SNA	
03025	5724		JMP I	JDIGIT
03026	1302		TAD	07764B
03027	7100		CLL	
03030	1065		TAD	012
03031	7430		SZL	
03032	5724		JMP I	JDIGIT
03033	1300		TAD	07725A
03034	7100		CLL	
03035	1321		TAD	032
03036	7430		SZL	
03037	5703		JMP I	PLETTER
03040	7330		CLA CLL	CML RAR
03041	1456		TAD I	EPTR
03042	3456		DCA I	EPTR
03043	1076	REMPACK,	TAD	PTEXT
03044	3457		DCA I	FPTR
03045	2057		ISZ	FPTR
03046	3307	TXTPAK,	OCA	THISTXT
03047	1456		TAD I	EPTR
03050	1301		TAD	07763B
03051	7450		SNA	
03052	5276		JMP	CRINTXT
03053	1304		TAD	07753
03054	7650		SNA CLA	
03055	5370		JMP	DQINTXT
03056	1456		TAD I	EPTR
03057	0070		AND	077

03060	3456	DCA I	EPTR
03061	1307	TAD	THISTXT
03062	7450	SNA	
03063	5270	JMP	LHALF
03064	1456	TAD I	EPTR
03065	3457	DCA I	FPTR
03066	2057	ISZ	FPTR
03067	5274	JMP	RHALF
03070	1456	LHALF, TAD I	EPTR
03071	7106	CLL RTL	
03072	7006	RTL	
03073	7006	RTL	
03074	2056	RHALF, ISZ	EPTR
03075	5246	JMP	TXTPAK
03076	1307	CRINTXT, TAD	THISTXT
03077	5723	JMP I	JTXXIT

03100	7725	07725A, 7725
03101	7763	07763B, 7763
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03103	3446	PLETTER, LETTER
03104	7753	07753, 7753
03105	4200	04200, 4200
03106	0042	042, 42
03107	0000	THISTXT, 0
03110	0000	NONBLNK, 0
03111	1456	TAD I EPTR
03112	1054	TAD 07740
03113	7640	SZA CLA
03114	5317	JMP .+3
03115	2056	ISZ EPTR
03116	5311	JMP NONBLNK+1
03117	1456	TAD I EPTR
03120	5710	JMP I NONBLNK
03121	0032	032, 32
03122	7737	07737, 7737
03123	3201	JTXXIT, MTXXIT
03124	3204	JDIGIT, DIGIT
03125	7226	PXXCRLF, XXCRLF
03126	7505	PXXEXIT, XXEXIT
03127	0072	POPERA, OPERAND-1
03130	7506	PXXLIT0, XXLIT0
03131	4435	LITRAL, FENTER
03132	2073	FST OPERAND
03133	0000	FEXIT
03134	1075	TAD OPERAND+2
03135	7640	SZA CLA
03136	5346	JMP ALL3
03137	1074	TAD OPERAND+1
03140	7640	SZA CLA
03141	5347	JMP JUST2
03142	1073	TAD OPERAND
03143	7650	SNA CLA

03144	5350		JMP	JUST0
03145	7344	JUST1,	CLA CLL CMA RAL	
03146	7001	ALL3,	IAC	
03147	1062	JUST2,	TAD	02
03150	7040	JUST0,	CMA	
03151	3031		DCA	TMP

03152	1327	TAD	POPERA	
03153	3013	DCA	INDEX1	
03154	1231	TAD	TMP	
03155	7240	CMA		
03156	1330	TAD	PXXLIT0	
03157	5363	JMP	JUSTOP	
03160	6201	JUSTOP, CDF	0	/***** 8 K INSERT.
03161	1413	TAD I	INDEX1	
03162	6211	CDF	10	/***** 8 K INSERT.
03163	3457	JUSTOP, DCA I	FPTR	
03164	2057	ISZ	FPTR	
03165	2031	ISZ	TMP	
03166	5360	JMP	JUSTOP	
03167	5516	JMP I	PSLOOP	

03170	1307	DQINTXT, TAD	THISTXT	
03171	2056	ISZ	EPTR	
03172	7440	SZA		
03173	5376	JMP	,+3	
03174	1305	TAD	04200	
03175	5723	JMP I	JTXXIT	
03176	1306	TAD	042	
03177	3457	DCA I	FPTR	
03200	2057	ISZ	FPTR	
03201	3457	MTXXIT, DCA I	FPTR	
03202	2057	ISZ	FPTR	
03203	5516	JMP I	PSLOOP	

03204	7200	DIGIT, CLA		
03205	1464	TAD I	SNUMFLG	
03206	1376	TAD	01774	
03207	7440	SZA		/IS IT 'GOTO' OR 'THEN'
03210	7001	IAC		
03211	7440	SZA		/OR 'GOSUB'
03212	1375	TAD	01742	
03213	7650	SNA CLA		/OR 'LIST'
03214	7240	CLA CMA		/YES
03215	3064	DCA	SNUMFLG	
03216	4435	FENTER		
03217	3152	FLD	ZERO	
03220	0000	FEXIT		
03221	3365	DCA	DPFLAG	
03222	3366	DCA	DECFRAC	
03223	7410	SKP		
03224	2056	DIGIN, ISZ	EPTR	
03225	4522	JMB I	PNONBLNK	
03226	1316	TAD	07673	
03227	7450	SNA		
03230	5263	JMP	ITSE	
03231	1370	TAD	027	
03232	7450	SNA		
03233	5256	JMP	ITSDP	

03234	1374		TAD	07764C
03235	7100		CLL	
03236	1065		TAD	012
03237	7420		SNL	
03240	5331		JMP	ENDNUM
03241	7110		CLL RAR	
03242	1373		TAD	02040A
03243	3360		DCA	FDIGIT
03244	7010		RAR	
03245	3361		DCA	FDIGIT+1
03246	4035		FENTER	
03247	6545		FMPI	PTEN
03250	4310		FAD+FWD+FDIGIT=.	
03251	0000		FEXIT	
03252	1365		TAD	DPFLAG
03253	7640		SZA CLA	
03254	2366		ISZ	DECFRAC
03255	5224		JMP	OIGIN
03256	1365	ITSDP,	TAD	DPFLAG
03257	7640		SZA CLA	
03260	5331		JMP	ENDNUM
03261	2365		ISZ	DPFLAG
03262	5224		JMP	DIGIN
03263	3360	ITSE,	DCA	FDIGIT
03264	1064		TAD	SNUMFLG
03265	7640		SZA CLA	
03266	5331		JMP	ENDNUM
03267	2056		ISZ	EPTR
03270	4522		JMS I	PNONBLNK
03271	1371		TAD	077250
03272	7450		SNA	
03273	5300		JMP	ITSP
03274	1372		TAD	07776
03275	7640		SZA CLA	
03276	5301		JMP	NOTSGN
03277	2360		ISZ	FOIGIT
03300	2056	ITSP,	ISZ	EPTR
03301	4767	NOTSGN,	JMS I	JISDIG
03302	5331		JMP	ENDNUM
03303	2056		ISZ	EPTR
03304	3361		DCA	FDIGIT+1
03305	4767		JMS I	JISDIG
03306	5322		JMP	ONLY1
03307	7200		CLA	
03310	1361		TAD	FDIGIT+1
03311	7106		CLL RTL	
03312	1361		TAD	FDIGIT+1
03313	7104		CLL RAL	
03314	3361		DCA	FDIGIT+1
03315	4767		JMS I	JISDIG
03316	7673	07673,	7673	
03317	1361		TAD	FDIGIT+1
03320	3361		DCA	FDIGIT+1
03321	2056		ISZ	EPTR
03322	1360	ONLY1,	TAD	FDIGIT

03323	7110	CLL RAR	
03324	1361	TAD	FOIGIT+1
03325	7422	SNL	
03326	7241	CIA	
03327	1366	TAD	DECFRAC
03330	3366	DCA	DECFRAC
03331	7200	ENDNUM, CLA	
03332	1366	TAD	DECFRAC
03333	7700	SMA CLA	
03334	1364	TAD	DIVXTEN
03335	1363	TAD	MULXTEN
03336	3346	DCA	MULEXP
03337	1366	TAD	DECFRAC
03340	7510	SPA	
03341	7041	CIA	
03342	7040	CMA	
03343	3366	DCA	DECFRAC
03344	5350	JMP	.+4
03345	4435	FENTER	
03346	7402	MULEXP, HLT	
03347	0000	EXIT	
03350	2366	ISZ	DECFRAC
03351	5345	JMP	.+4
03352	2064	ISZ	SNIMFLG
03353	5777	JMP I	PLITRAL
03354	4506	JMS I	PFIX
03355	7200	CLA	
03356	5757	JMP I	PCOMMON
03357	3400	PCOMMON, COMMON	
03360	0000	FOIGIT, 01010	
03361	0000		
03362	0000		
03363	6545	MULXTEN, FMPI	PTEN
03364	1000	DIVXTEN, FDV=FMP	
03365	0000	DPFLAG, 0	
03366	0000	DECFRAC, 0	
03367	6532	JISDIG, ISDIG	
03370	0027	027, 27	
03371	7725	07725B, 7725	
03372	7776	07776, 7776	
03373	2040	02040A, 2040	
03374	7764	07764C, 7764	
03375	1742	01742, 1742	
03376	1774	01774, 1774	
03377	3131	PLITRAL, LITRAL	

03400	1005	COMMON,	TAD	PSYMTAB	
03401	3060		DCA	GPTR	
03402	1006		TAD	NSYMTAB	
03403	3061		DCA	HPTR	
03404	5231		JMP	IN	
03405	1460	LUP,	TAD I	GPTR	
03406	2060		ISZ	GPTR	
03407	2060		ISZ	GPTR	
03410	7640		SZA CLA	/IS IT A LINENO	
03411	5227		JMP	NOT	/NO
03412	1460		TAD I	GPTR	
03413	2060		ISZ	GPTR	
03414	7041		CIA		
03415	1017		TAD	AC2	
03416	7640		SZA CLA		
03417	5230		JMP	NOT+1	
03420	1460		TAD I	GPTR	
03421	7041		CIA		
03422	1016		TAD	AC3	
03423	7640		SZA CLA		
03424	5230		JMP	NOT+1	
03425	7346		CLA CLL	CMA RTL	
03426	5312		JMP	ISDEF2	
03427	2060	NOT,	ISZ	GPTR	
03430	2060		ISZ	GPTR	
03431	2061	IN,	ISZ	HPTR	
03432	5205		JMP	LUP	
03433	4515		JMS I	PGETBLK	
03434	3064		DCA	SNUMFLG	
03435	3464		DCA I	SNUMFLG	
03436	1064		TAD	SNUMFLG	
03437	3013		DCA	INDEX1	
03440	3413		DCA I	INDEX1	
03441	1017		TAD	AC2	
03442	3413		DCA I	INDEX1	
03443	1016		TAD	AC3	
03444	3413		DCA I	INDEX1	
03445	5314		JMP	IT8DEF	
03446	7001	LETTER,	IAC		
03447	7106		CLL RTL		
03450	7006		RTL		
03451	7006		RTL		
03452	3031		DCA	TMP	
03453	2056		ISZ	EPTR	
03454	4522		JMS I	PNONBLNK	
03455	1273		TAD	07706C	
03456	7100		CLL		
03457	1065		TAD	012	
03460	7620		SNL CLA		
03461	5266		JMP	SIMPLY	
03462	1456		TAD I	EPTR	
03463	1031		TAD	TMP	
03464	3031		DCA	TMP	
03465	2056		ISZ	EPTR	
03466	1005	SIMPLY,	TAD	PSYMTAB	

03467	3060	DCA	GPTR
03470	1006	TAD	NSYMTAB
03471	3061	DCA	HPTR
03472	5324	JMP	VSCHIN
03473	7706	07706C, 7706	
03474	7000	07000B, 7000	
03475	1460	VSCHLUP, TAD I	GPTR
03476	1274	TAD	07000B
03477	7640	SZA CLA	
03500	5320	JMP	VSCHNOT
03501	2060	ISZ	GPTR
03502	1460	TAD I	GPTR
03503	3064	DCA	SNUMFLG
03504	1464	TAD I	SNUMFLG
03505	7041	CIA	
03506	1031	TAD	TMP
03507	7640	SZA CLA	
03510	5321	JMP	VSCHNOT+1
03511	7240	CLA CMA	
03512	1060	ISDEF2, TAD	GPTR
03513	3064	DCA	SNUMFLG
03514	1064	ITSDEF, TAD	SNUMFLG
03515	3457	DCA I	FPTR
03516	2057	ISZ	FPTR
03517	5516	JMP I	PSLOOP
03520	2060	VSCHNOT, ISZ	GPTR
03521	2060	ISZ	GPTR
03522	2060	ISZ	GPTR
03523	2060	ISZ	GPTR
03524	2061	VSCHIN, ISZ	HPTR
03525	5275	JMP	VSCHLUP
03526	4515	JMS I	PGETBLK
03527	3064	DCA	SNUMFLG
03530	7240	CLA CMA	
03531	1064	TAD	SNUMFLG
03532	3013	DCA	INDEX1
03533	1350	TAD	01000
03534	3413	DCA I	INDEX1
03535	1003	TAD	ARRLOC
03536	3413	DCA I	INDEX1
03537	3413	DCA I	INDEX1
03540	3413	DCA I	INDEX1
03541	4563	JMS I	PCHKFIT
03542	1031	TAD	TMP
03543	4521	JMS I	PSTICKIT
03544	4521	JMS I	PSTICKIT
03545	4521	JMS I	PSTICKIT
03546	4521	JMS I	PSTICKIT
03547	5314	JMP	ITSDEF
03550	1000	01000, 1000	
03551	0000	POP, 0	
03552	7240	CLA CMA	
03553	1036	TAD	PDL
03554	3036	DCA	PDL
03555	1436	TAD I	PDL

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03556 5751      JMP I POP
03557 3737      FOURLF, TEXT '....'
03560 3737
03561 0000
03562 3724      UGH1, TEXT 'TOO BIG. LINE IGNORED.'
03563 1717
03564 4002
03565 1107
03566 5640
03567 1411
03570 1605
03571 4011
03572 0716
03573 1722
03574 0504
03575 3700

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03600 1746      LIST, TAD I PXLINBUF
03601 3050      OCA WORD
03602 4566      ISIT /CHECK FOR A "*"
03603 3476      3476
03604 5210      JMP .+4 /NOPE.
03605 7240      CLA CMA /YEP, SET UP PUTXRA BY GIVING A PHOONEY
03606 4541      JMS I PCOWT /CALL TO THE WAIT ROUTINE.
03607 4177      JMS GETWD /AND GET ANOTHER WORD NOW.
03610 4566      ISIT /LINENO
03611 0000
03612 5216      JMP LISTALL
03613 2050      ISZ WORD
03614 1450      TAD I WORD
03615 7450      SNA
03616 1004      LISTALL, TAD CODELOC
03617 3045      LISTSON, DCA LOCCTR
03620 4177      LISTLUP, JMS GETWD
03621 4566      ISIT /(EOF)
03622 1755      1755
03623 5230      JMP LNOEND /NOT DONE YET
03624 4541      JMS I PCOWT /WAIT FOR I/O TO FINISH AND CLEAN UP.
03625 4302      JMS PRINTXT
03626 3557      FOURLF
03627 5520      JMP I PEDIT
03630 4566      LNOEND, ISIT /A LINENO
03631 0000
03632 5240      JMP LIST2 /NO

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03633	1250	TAD	WORD	
03634	4523	JMS I	PPRINUM	
03635	1251	TAD	0240	
03636	4433	JMS I	PPUTCH	
03637	5220	JMP	LISTLUP	
03640	4566	LIST2, ISIT	/A VARIABLE	
03641	7000	7000		
03642	5255	JMP	LIST3	
03643	2050	ISZ	WORD	
03644	1450	TAD I	WORD	
03645	3050	DCA	WORD	
03646	1450	TAD I	WORD	
03647	3253	DCA	PRINVAR	
03650	4302	JMS	PRINTXT	
03651	3653	PRINVAR		
03652	5220	JMP	LISTLUP	
03653	0000	PRINVAR, 0		
03654	0000	0		
03655	4575	LIST3, JMS I	PISITLIT /ISIT A LITERAL	
03656	5261	JMP	LIST4 /NO	
03657	4517	JMS I	POUTNUM /PRINT IT	
03660	5220	JMP	LISTLUP	
03661	4566	LIST4, ISIT	/(TEXT)	
03662	5000	5000		
03663	5276	JMP	LIST5	
03664	4177	L4LUP, JMS	GETWD	
03665	1050	TAD	WORD	
03666	3253	DCA	PRINVAR	
03667	4302	JMS	PRINTXT	
03670	3653	PRINVAR		
03671	1050	TAD	WORD	
03672	0070	AND	077	
03673	7640	SZA CLA		
03674	5264	JMP	L4LUP	
03675	5220	JMP	LISTLUP	
03676	1050	LIST5, TAD	WORD /ITS A SYSTEM SYMBOL	
03677	7001	IAC		
03700	4302	JMS	PRINTXT	

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03701 5220      JMP      LISTLUP
03702 2200 PRINTXT,0
03703 7440      SZA
03704 5310      JMP      JBPENT+1
03705 6201      CDF      0
03706 1702      TAD I    PRINTXT
03707 2302 JBPENT, ISZ    PRINTXT
03708 3042      DCA      PRTEMP
03709 1442 PRLOOP, TAD I  PRTEMP
03710 7012      RTR
03711 7012      RTR
03712 7012      RTR
03713 4320      JMS      PRSUBR
03714 1402      TAD I    PRTEMP
03715 4320      JMS      PRSUBR
03716 2042      ISZ      PRTEMP
03717 5311      JMP      PRLOOP
03718 6211 PRTXRET, CDF    10
03719 5702      JMP I    PRINTXT
03720 0000 PRSUBR, 0
03721 0070      AND      077
03722 7450      SNA
03723 5322      JMP      PRTXRET
03724 1345      TAD      07741
03725 7450      SNA
03726 5340      JMP      CRLFPR
03727 1070      TAD      077
03728 0070      AND      077
03729 1051      TAD      0240
03730 4433      JMS I    PPUTCH
03731 5724      JMP I    PRSUBR
03732 1007 CRLFPR, TAD    0215
03733 4433      JMS I    PPUTCH
03734 1010      TAD      0212
03735 4433      JMS I    PPUTCH
03736 5724      JMP I    PRSUBR
03737 7741      07741, 7741
03738 7513 PXLINBU, LINBU+1
03739 0000 PRINUM, 0
03740 7001      IAC
03741 3013      DCA      INDEX1
03742 4362      JMS      BEGFIX
03743 1413      TAD I    INDEX1
03744 3017      DCA      AC2
03745 1413      TAD I    INDEX1
03746 3016      DCA      AC3
03747 4546      JMS I    PANORM
03748 4517      JMS I    POUTNUM
03749 5747      JMP I    PRINUM

```

/***** 8 K INSERT,
 /***** 8 K INSERT.

/***** 8 K INSERT.

/SET UP FAC TO RECEIVE INTEGER DATA.

```

23762 0000 BEGFIX, 0
23763 3017 DCA      AC2

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/SETS UP FOR INTEGER TO AC MODE.
 /CLEAR THEM ALL, EXCEPT FOR LOW WORD.

03764	3020	DCA	AC1
03765	3012	DCA	OV
03766	3024	DCA	ACS
03767	1372	TAD	0233
03770	3025	DCA	ACE
03771	5762	JMP I	BEGFIX

03772 0233 0233, 233

03773	4571	RESTORE,GET+MUSTBE	/(CR) OR '\'
03774	2000	2000	
03775	1004	TAO	CODELOC
03776	3046	DCA	READLOC
03777	5503	JMP I	PEXECUTE

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04000	4566	MOREIN, 1817	/(CR) OR '\'
04001	2000	2000	
04002	5234	JMP	INPLUP
04003	1010	TAO	0212
04004	4433	JMS I	PPUTCH
04005	1130	TAD	OUTD2
04006	3131	DCA	OUTDEV
04007	7240	INPUT, CLA CMA	
04010	1127	TAD	INDEV
04011	7640	SZA CLA	
04012	5224	JMP	IPNOPE
04013	1131	TAO	OUTDEV
04014	4504	JMS I	PPUSH
04015	7201	CLA IAC	
04016	3131	DCA	OUTDEV
04017	4541	JMS I	PCDWT

/GET THE OLD OUTPUT DEVICE.
/AND RESET IT,
/CHECK THE INPUT DEVICE NOW.
/ARE WE INPUT FROM THE TELETYPE.

/NOPE,
/GET THE OUTPUT DEVICE.
/SAVE IT FOR A SECOND.
/SET OUTPUT DEVICE TO TTY FOR "7"

/WAIT FOR OUTPUT TO FINISH, THEN CONTINUE.

```

24020 1070 TAD 077
24021 4433 JMS I PPUTCH
24022 4505 JMS I PPOP
24023 3131 DCA OUTDEV
24024 1045 IPNOPE, TAD LOCCTR
24025 3565 DCA I GSBPTR
24026 1076 TAD PTEXT
24027 4524 JMS I PGETLIN
24030 1565 TAD I GSBPTR
24031 3045 DCA LOCCTR
24032 1037 TAD PLINBUF
24033 3263 DCA INPPTR
24034 4513 INPLUP, JMS I PGETVAR
24035 1050 TAD WORD
24036 3264 DCA INWDTMP
24037 1045 TAD LOCCTR
24040 3265 DCA INLCTMP
24041 1263 TAD INPPTR
24042 3045 DCA LOCCTR
24043 4501 JMS I PEVAL
24044 1045 TAD LOCCTR
24045 3263 DCA INPPTR
24046 1265 TAD INLCTMP
24047 3045 DCA LOCCTR
24050 4512 JMS I PSTOVAR
24051 7332 CLA CLL CML RTR
24052 1664 TAD I INWDTMP
24053 7640 SZA CLA
24054 5200 JMP MOREIN
24055 1010 TAD 0212
24056 4433 JMS I PPUTCH
24057 1130 TAD OUTD2
24060 3131 DCA OUTDEV
24061 3126 DCA COLUMN
24062 5503 JMP I PEXECUTE
24063 0000 INPPTR, 0
24064 0000 INWDTMP, 0
24065 0000 INLCTMP, 0
24066 0000 XGIBIT, 0
24067 4177 JMS GETWD
24070 1266 TAD XGIBIT
24071 3273 DCA XIBIT
24072 5274 JMP XIBIT+1
24073 0000 XIBIT, 0
24074 1450 TAD I WORD
24075 6201 CDF 0
24076 1673 TAD I XIBIT
24077 6211 CDF 10
24100 2273 ISZ XIBIT
24101 7650 SNA CLA
24102 2273 ISZ XIBIT
24103 5673 JMP I XIBIT
24104 0000 ISITLIT, 0
24105 1450 TAD I WORD
24106 7146 CLL CMA RTL

```

/RESET OUTPUT DEVICE NOW.

/RESET THE DEV, BABY

/***** 8 K INSERT.

/***** 8 K INSERT.

04107	7032	CML RTR	
04110	3024	OCA	AC8
04111	1024	TAD	AC8
04112	1160	TAD	04
04113	7620	SNL CLA	
04114	5704	JMP I	ISITLIT
04115	2304	ISZ	ISITLIT
04116	3020	OCA	AC1
04117	3017	OCA	AC2
04120	3016	OCA	AC3
04121	4333	JMS	ISLIT
04122	3016	OCA	AC3
04123	4333	JMS	ISLIT
04124	3017	OCA	AC2
04125	4333	JMS	ISLIT
04126	3020	OCA	AC1
04127	4435	LOADED, FENTER	
04130	3016	FLO	AC3
04131	0000	PEXIT	
04132	5704	JMP I	ISITLIT
04133	0000	ISLIT, 0	
04134	2024	IJZ	AC8
04135	7410	SKP	
04136	5327	JMP	LOADED
04137	4177	JMS	GETWD
04140	1050	TAD	WORD
04141	5733	JMP I	ISLIT
04142	0000	ERROR, 0	
04143	4537	JMS I	PRESET
04144	4514	JMS I	PPRINTXT
04145	6531	CRLF	
04146	1342	TAD	ERROR
04147	3351	OCA	,+2
04150	4514	JMS I	PPRINTXT
04151	7402	HLT	
04152	4514	JMS I	PPRINTXT
04153	4170	QERROR	
04154	1452	TAD I	LINENO
04155	7710	SPA CLA	
04156	5363	JMP	,+5
04157	4514	JMS I	PPRINTXT
04160	6451	ATLINE	
04161	1052	TAD	LINENO
04162	4523	JMS I	PPRINUM
04163	4514	JMS I	PPRINTXT
04164	6531	CRLF	
04165	1125	TAD	PPOLIST
04166	3036	OCA	POL
04167	5520	JMP I	PEDIT
04170	4005	QERROR, TEXT ' ERROR'	
04171	2222		
04172	1722		
04173	0000		

/RESET ALL I/O DEVICES.

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/      JMS      FPT      /ENTER FLOATING POINT PACK
/      0000      /FEXIT
/      0040      /FSNE
/      0050      /FSEQ
/      0100      /FSGE
/      0110      /FSLT
/      0140      /FSGT
/      0150      /FSLE
/
/      IF BIT 4 OFF THEN SAME AS PDP-8
/      IF BIT 4 ON THEN IF BIT 3 OFF THEN RELATIVE PLUS
/                      IF BIT 3 ON THEN RELATIVE MINUS
/
/      1XXX      /FJMP
/      2XXX      /FST
/      3XXX      /FLD
/      4XXX      /FAD
/      5XXX      /FSB
/      6XXX      /FMP
/      7XXX      /FDV

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04200 0000  FPT,  0
04201 5204      JMP      ,+3
04202 4546  FPLoop, JMS I  PANORM
04203 2200      ISZ      FPT
04204 6201      CDF      0
04205 1600      TAD I    FPT
04206 7006      RTL
04207 7006      RTL
04210 0072      AND      07
04211 7450      SNA
04212 5305      JMP      FPOPER
04213 3273      DCA      FPGOTO
04214 1600      TAD I    FPT
04215 0155      AND      0200
04216 7650      SNA CLA
04217 5227      JMP      FPPGZ
04220 1600      TAD I    FPT
04221 0027      AND      0177
04222 7430      SZL
04223 7041      CIA
04224 1200      TAD      FPT
04225 3304      DCA      FPADDR
04226 5237      JMP      FPDOIT
04227 1600  FPPGZ, TAD I    FPT
04230 0027      AND      0177
04231 3304      DCA      FPADDR
04232 7420      SNL
04233 5237      JMP      FPDOIT
04234 1704      TAD I    FPADDR

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/***** 8 K INSERT.

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24235	3324	DCA	FPADDR
24236	6211	COF	10
24237	7346	FPDOIT, CLA CLL	CMA RTL
24240	1273	TAD	FPGOTO
24241	7710	SPA CLA	
24242	5270	JMP	FPNOADR
24243	7330	CLA CLL	CML RAR
24244	0704	AND I	FPADDR
24245	3026	DCA	OP8
24246	1704	TAD I	FPADDR
24247	7640	SZA CLA	
24250	7040	CMA	
24251	3156	DCA	FPFLAG
24252	1704	TAD I	FPADDR
24253	7012	RTR	
24254	7010	RAR	
24255	0071	AND	0377
24256	3030	DCA	OPE
24257	1704	TAD I	FPADDR
24260	0072	AND	07
24261	3023	DCA	OP1
24262	2304	ISZ	FPADDR
24263	1704	TAD I	FPADDR
24264	3022	DCA	OP2
24265	2304	ISZ	FPADDR
24266	1704	TAD I	FPADDR
24267	3021	DCA	OP3
24270	1273	FPNOADR, TAD	FPGOTO
24271	1274	TAD	FPJUMP
24272	3273	DCA	.+1
24273	7402	FPGOTO, HLT	
24274	5674	FPJUMP, JMP I	.
24275	4317	FPJMP	
24276	4322	FPSTO	
24277	4351	FPLAC	
24300	4456	FPADD	
24301	4453	FPSUB	
24302	4530	FPMUL	
24303	4667	FPDIV	
24304	0000	FPADDR, 0	
24305	1600	FPOPER, TAD I	FPT
24306	6211	COF	10
24307	7450	SNA	
24310	5600	JMP I	FPT
24311	1345	TAD	07600
24312	3314	DCA	FPSKIP
24313	4333	JMS	HIGHNO
24314	7402	FPSKIP, HLT	
24315	2200	ISZ	FPT
24316	5203	JMP	FPLDOP+1
24317	1304	FPJMP, TAD	FPADDR
24320	3200	DCA	FPT
24321	5204	JMP	FPLDOP+2
24322	4333	FPSTO, JMS	HIGHNO
24323	3704	DCA I	FPADDR

//////// 8 K INSERT.

//////// 8 K INSERT.

04324	2304	ISZ	FPADDR
04325	1017	TAD	AC2
04326	3704	DCA I	FPADDR
04327	2304	ISZ	FPADDR
04330	1016	TAD	AC3
04331	3704	DCA I	FPADDR
04332	5203	JMP	FPLOOP+1
04333	0000	HIGHWD, 0	
04334	1025	TAD	ACE
04335	7104	CLL RAL	
04336	7500	SMA	

04337	7106		CLL	RTL
04340	7530		SPA	SZL
04341	5345		JMP	07600
04342	1024		TAD	AC3
04343	1220		TAD	AC1
04344	5733		JMP I	HIGHWD
04345	7600	07600,		7600
04346	1071		TAD	0377
04347	3025		DCA	ACE
04350	5334		JMP	HIGHWD+1
04351	1026	FPLAC,	TAD	DPS
04352	3024		DCA	AC8
04353	1030		TAD	OPE
04354	3025		DCA	ACE
04355	1023		TAD	DP1
04356	3020		DCA	AC1
04357	1022		TAD	DP2
04360	3017		DCA	AC2
04361	1021		TAD	OP3
04362	3016		DCA	AC3
04363	3012		DC	OV
04364	5202		JMP	FPLDDP
04365	7041	UPARR2,	CIA	/(CMA) IF 1 ORG INDEXING
04366	3013		DCA	INDEX1
04367	4435		FENTER	
04370	3151		FLO	ONE
04371	0000		FEXIT	
04372	5376		JMP	,+4
04373	4435		FENTER	
04374	6073		FMP	OPERAND
04375	0000		FEXIT	
04376	2013		ISZ	INDEX1
04377	5373		JMP	,+4
04400	5601		JMP I	,+1
04401	1203		OPDOONE	

04402	0000	AR1,	0	
04403	1020		TAD	AC1
04404	7110		CLL	RAR
04405	3020		DCA	AC1
04406	1017		TAD	AC2
04407	7010		RAR	
04410	3017		DCA	AC2
04411	1016		TAD	AC3
04412	7010		RAR	
04413	3016		DCA	AC3
04414	7010		RAR	
04415	3012		DCA	OV
04416	5602		JMP I	AR1
04417	0000	ACN,	0	
04420	1234		TAD	POP3

04421	3235	DCA	DADD
04422	7346	CLA CLL	CMA RTL
04423	3202	DCA	AR1
04424	7024	CML RAL	
04425	1635	TAD I	DADD
04426	7041	CIA	
04427	3635	DCA I	DADD
04430	2235	ISZ	DADD
04431	2202	ISZ	AR1
04432	5224	JMP	-6
04433	5617	JMP I	ACN
04434	0021	POP3,	OP3
04435	0000	DADD,	0
04436	7100		CLL
04437	1016	TAD	AC3
04440	1021	TAD	OP3
04441	3016	DCA	AC3
04442	7004	RAL	
04443	1017	TAD	AC2
04444	1022	TAD	DP2
04445	3017	DCA	AC2
04446	7004	RAL	
04447	1020	TAD	AC1
04450	1023	TAD	DP1
04451	3020	DCA	AC1
04452	5635	JMP I	DADD
04453	7330	FP8UB, CLA CLL	CML RAR
04454	1026	TAD	DP8
04455	3026	DCA	OP8
04456	2156	FPADD, ISZ	FPFLAG
04457	5326	JMP	EDFAD
04460	1023	TAD	ACE
04461	7141	CLL CIA	
04462	1030	TAD	DPE
04463	7430	SZL	
04464	5302	JMP	BCKWDS
04465	3235	DCA	DADD
04466	1023	ALGNLP, TAD	OP1
04467	7110	CLL RAR	
04470	3023	DCA	DP1
04471	1022	TAD	DP2
04472	7010	RAR	
04473	3022	DCA	DP2
04474	1021	TAD	OP3
04475	7010	RAR	
04476	3021	DCA	OP3
04477	2235	ISZ	DADD
04500	5266	JMP	ALGNLP
04501	5312	JMP	SET8GN
04502	7040	BCKWDS, CMA	
04503	3235	DCA	DADD
04504	1030	TAD	DPE
04505	3023	DCA	ACE
04506	7410	SKP	
04507	4202	JMS	AR1

04510	2235		ISZ	QADD
04511	5307		JMP	,=2
04512	1024	SETSGN,	TAD	ACB
04513	1026		TAD	OPS
04514	7710		SPA CLA	
04515	4217		JMS	ACN
04516	4235		JMS	QADD
04517	1020		TAD	AC1
04520	7700		SMA CLA	
04521	5326		JMP	EOFAD
04522	7346		CLA CLL	CMA RTL
04523	4217		JMS	ACN
04524	1026		TAD	OPS
04525	3024		DCA	ACS
04526	3012	EOFAD,	DCA	OV
04527	5775		JMP I	PFPLoop
04530	2156	FPMUL,	ISZ	FPFLAG
04531	5371		JMP	MULCLR
04532	1024		TAD	ACB
04533	1026		TAD	OPS
04534	3024		DCA	ACS
04535	1025		TAD	ACE
04536	1030		TAD	OPE
04537	1377		TAD	07577
04540	3025		DCA	ACE
04541	1020		TAD	AC1
04542	3026		DCA	OPS
04543	1017		TAD	AC2
04544	3030		DCA	OPE
04545	1016		TAD	AC3
04546	3031		DCA	TMP
04547	3020		DCA	AC1
04550	1162		TAD	07745
04551	3376		DCA	FPTEMP
04552	4202	MPYLUP,	JMS	ARI
04553	1026		TAD	OPS
04554	7010		RAR	
04555	3026		DCA	OPS
04556	1030		TAD	OPE
04557	7010		RAR	
04560	3030		DCA	OPE
04561	1031		TAD	TMP
04562	7010		RAR	
04563	3031		DCA	TMP
04564	7430		ISZ	
04565	4235		JMS	QADD
04566	2376		ISZ	FPTEMP
04567	5352		JMP	MPYLUP
04570	5775		JMP I	PFPLoop
04571	7346	MULCLR,	CLA CLL	CMA RTL
04572	3025		DCA	ACE
04573	3020		DCA	AC1
04574	5775		JMP I	PFPLoop
04575	4202	PFPLoop, FPLoop		
04576	0000	FPTEMP, 0		

24577 7577 07577, 7577

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04600	0000	ANORM,	0		
04601	1020		TAD	AC1	
04602	7450		SNA		/IS HIGH WORD ZERO?
04603	5212		JMP	MAYZERO	/YEP, ENTIRE NUMBER MAY BE ZERO.
04604	1055		TAD	07770	
04605	7710		SPA	CLA	
04606	5220		JMP	NOTBIG	
04607	4547		JM3 I	PAR1	
04610	2025		IS1	ACE	
04611	5201		JMP	ANORM+1	
04612	1017	MAYZERO,	TAD	AC2	/IS SECOND WORD ZERO?
04613	7640		SZA	CLA	
04614	5220		JMP	NOTBIG	/NOPE, NORMAL NORMALIZE.
04615	1016		TAD	AC3	/1 & 2 ARE ZERO, IS THIRD WORD?
04616	7650		SNA	CLA	
04617	5245		JMP	UNDERF	/YEP, CLEAR AC. ALL ZERO.
04620	1012	NOTBIG,	TAD	OV	
04621	7650		SNA	CLA	
04622	5233		JMP	NOBUMP	
04623	2016		ISZ	AC3	
04624	5233		JMP	NOBUMP	
04625	2017		ISZ	AC2	
04626	5233		JMP	NOBUMP	
04627	2020		ISZ	AC1	
04630	3012		DCA	OV	
04631	5201		JMP	ANORM+1	
04632	7240		CLA	CMA	
04633	1025	NOBUMP,	TAD	ACE	
04634	7510		SPA		
04635	5245		JMP	UNDERF	
04636	3025		DCA	ACE	
04637	7346		CLA	CLL CMA RTL	
04640	1020		TAD	AC1	
04641	7740		SMA	SZA CLA	
04642	5600		JMP I	ANORM	
04643	4254		JMS	AL1	
04644	5232		JMP	NOBUMP+1	
04645	7200	UNDERF,	CLA		
04646	3024		DCA	AC8	
04647	3025		DCA	ACE	
04650	3020		DCA	AC1	

04651	3017	DCA	AC2
04652	3016	DCA	AC3
04653	5620	JMP I	ANORM
04654	2020	ALI,	0
04655	1016	TAD	AC3
04656	7124	CLL RAL	
04657	3016	DCA	AC3
04660	1017	TAD	AC2
04661	7004	RAL	
04662	3017	DCA	AC2
04663	1020	TAD	AC1
04664	7004	RAL	
04665	3020	DCA	AC1
04666	5654	JMP I	ALI
04667	6201	FPDIV,	0
04670	2156	ISZ	FPFLAG
04671	5336	JMP	FPZDIV
04672	1024	TAD	ACS
04673	1026	TAD	OPS
04674	3024	DCA	ACS
04675	1030	T D	DPE
04676	7041	CLA	
04677	1025	TAD	ACE
04700	1027	TAD	D177
04701	3025	DCA	ACE
04702	3031	DCA	TMP
04703	1343	TAD	D7743
04704	3200	DCA	ANORM
04705	7330	DIVLP,	CLA CLL CML RAR
04706	0023	AND	OP1
04707	1020	TAD	AC1
04710	7700	SMA CLA	
04711	4742	JMS I	PACN
04712	4557	JMS I	PDADD
04713	1031	TAD	TMP
04714	7004	RAL	
04715	3031	DCA	TMP
04716	1030	TAD	DPE
04717	7004	RAL	
04720	3030	DCA	DPE
04721	1026	TAD	OPS
04722	7004	RAL	
04723	3026	DCA	OPS
04724	4550	JMS I	PAL1
04725	2200	ISZ	ANDRM
04726	5305	JMP	DIVLP
04727	1026	TAD	OPS
04730	3020	DCA	AC1
04731	1030	TAD	DPE
04732	3017	DCA	AC2
04733	1031	TAD	TMP
04734	3016	DCA	AC3
04735	5741	JMP I	PPFLDDP
04736	1071	FPZDIV,	TAD D377
04737	3025	DCA	ACE

////////////////////// 8 K INSERT.

04740	5741	JMP I	PPFLOOP	
04741	4202	PPFLOOP, FPL00P		
04742	4417	PACN,	ACN	
04743	7743	07743,	7743	
04744	0000	FIX,	0	
04745	1020	TAD	AC1	
04746	7650	SNA CLA		
04747	5367	JMP	ZFIXEX	
04750	1025	FIXLUP, TAD	ACE	
04751	1377	TAD	07545	
04752	7700	SMA CLA		
04753	5373	JMP	FIXEXIT	
04754	4547	JMS I	PAR1	
04755	1024	TAD	ACS	
04756	0012	AND	OV	
04757	7640	SZA CLA		
04760	2016	ISZ	AC3	
04761	5365	JMP	,+4	
04762	2017	ISZ	AC2	
04763	5365	JMP	,+2	
04764	2020	ISZ	AC1	
04765	2025	ISZ	ACE	
04766	5350	JMP	FIXLUP	
04767	3025	ZFIXEX, DCA	ACE	
04770	3020	DCA	AC1	
04771	3017	DCA	AC2	
04772	3016	DCA	AC3	
04773	3012	FIXEXIT, DCA	OV	
04774	1016	TAD	AC3	
04775	7001	S8FIX, IAC		/(NOP) IF 1 ORG INDEXING
04776	5744	JMP I	FIX	
04777	7545	07545,	7545	

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05000	0000	OUTNUM, 0		
05001	6201	COF	0	////////// 8 K INSERT.
05002	1024	TAD	AC8	
05003	7700	SMA CLA		
05004	5207	JMP	,+3	
05005	1351	TAD	0255	
05006	4433	JMS I	PPUTCH	
05007	1020	TAD	AC1	
05010	7640	SZA CLA		
05011	5216	JMP	NONZERO	
05012	1011	TAD	0260	
05013	4433	JMS I	PPUTCH	

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05014 6211 CDF 10
05015 5600 JMP I OUTNUM
05016 4746 NONZERO, JMS I FIXUP
05017 1355 TAD 07771
05020 3042 DCA PRTEMP
05021 1044 TAD PNUMBUF
05022 3025 DCA ACE
05023 5230 JMP .+5
05024 1020 CVTLOOP, TAD AC1
05025 0027 AND D177
05026 3020 DCA AC1
05027 4760 JMS I PMPY
05030 1020 TAD AC1
05031 7006 RTL
05032 7006 RTL
05033 7006 RTL
05034 0347 AND 017
05035 1011 TAD 0260
05036 3425 DCA I ACE
05037 2025 ISZ ACE
05040 2042 ISZ PRTEMP
05041 5224 JMP CVTLOOP
05042 7326 CLA CLL CML RTL
05043 1043 TAD DECEXP
05044 7450 SNA
05045 5325 JMP FMT1 /.0NNNNNNN
05046 7510 SPA
05047 5253 JMP FMT2 /N,NNNNNNE+NN
05050 1055 TAD 07770
05051 7710 SPA CLA
05052 5330 JMP FMT3 /OTHER THAN N,NNNNNNE+NN
05053 7200 FMT2, CLA /N,NNNNNNE+NN
05054 1044 TAD PNUMBUF
05055 3025 DCA ACE
05056 1357 TAD 07772
05057 3042 DCA PRTEMP
05060 1425 TAD I ACE
05061 4433 JMS I PPUTCH
05062 1356 TAD 0256A
05063 4433 JMS I PPUTCH
05064 2025 ISZ ACE
05065 1425 TAD I ACE
05066 4433 JMS I PPUTCH
05067 2042 ISZ PRTEMP
05070 5264 JMP .-4
05071 1352 TAD 0305
05072 4433 JMS I PPUTCH
05073 1043 TAD DECEXP
05074 7710 SPA CLA
05075 7326 CLA CLL CML RTL
05076 1350 TAD 0253
05077 4433 JMS I PPUTCH
05100 3025 DCA ACE
05101 1043 TAD DECEXP
05102 7510 SPA

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/***** 8 K INSERT.

SIC.LOE

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05103 7241
05104 3243
05105 1243

CIA
DCA DECEXP
TAD DECEXP

05106	1354	TAD	07766	
05107	7510	SPA		
05110	5314	JMP	.+4	
05111	3043	DCA	DECEXP	
05112	2025	ISZ	ACE	
05113	5305	JMP	.-6	
05114	7200	CLA		
05115	1025	TAD	ACE	
05116	1011	TAD	0260	
05117	4433	JMS I	PPUTCH	
05120	1043	TAD	DECEXP	
05121	1011	TAD	0260	
05122	4433	JMS I	PPUTCH	
05123	6211	FMTENF, COF	10	/***** 8 K INSERT.
05124	5600	JMP I	OUTNUM	
05125	4514	FMT1, JMS I	PPRINTXT	
05126	7371	OOTZERO		
05127	6201	COF	0	/***** 8 K INSERT.
05130	1355	FMT3, TAD	07771	
05131	3042	DCA	PRTEMP	
05132	1361	TAD	PNBF6	
05133	3025	TRYAGIN, DCA	ACE	
05134	1425	TAD I	ACE	
05135	1353	TAD	07520	
05136	7640	SZA CLA		
05137	5344	JMP	ZERDONE	
05140	2042	ISZ	PRTEMP	
05141	7240	CLA CMA		
05142	1025	TAD	ACE	
05143	5333	JMP	TRYAGIN	
05144	5745	ZERDONE, JMP I	.+1	/***** 8 K INSERT.
05145	6545	PZERDONE		/***** 8 K INSERT.
05146	5200	FIXUP, FIXITUP		
05147	0017	017, 17		
05150	0253	0253, 253		
05151	0255	0255, 255		
05152	0305	0305, 305		
05153	7520	07520, 7520		
05154	7766	07766, 7766		
05155	7771	07771, 7771		
05156	0256	0256A, 256		
05157	7772	07772, 7772		
05160	5321	PMPY, MPY		
05161	5343	PNBF6, NUMBUF+6		

05162	3714	TOOLONG, TEXT '_LINE TOO LONG_'	
05163	1116		
05164	0540		
05165	2417		
05166	1740		
05167	1417		
05170	1607		
05171	3700		

5200

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05200	0000	FIXITUP,0	
05201	1025	TAD	ACE
05202	1345	TAD	D7610
05203	3025	DCA	ACE
05204	7410	SKP	
05205	1043	OCC, TAD	DECEXP
05206	3043	DCA	DECEXP
05207	1020	NORMIT, TAD	AC1
05210	7006	RTL	
05211	7630	SZL CLA	
05212	5220	JMP	NORMED
05213	4550	JMS I	PAL1
05214	7240	CLA CMA	
05215	1025	TAD	ACE
05216	3025	DCA	ACE
05217	5207	JMP	NORMIT
05220	1025	NDRMED, TAD	ACE
05221	7540	SMA SZA	
05222	5236	JMP	NOTX10
05223	7200	CLA	
05224	4547	JMS I	PAR1
05225	4547	JMS I	PAR1
05226	4547	JMS I	PAR1
05227	4547	JMS I	PAR1
05230	4321	JMS	MPY
05231	1025	TAD	ACE
05232	1160	TAD	O4
05233	3025	DCA	ACE
05234	7240	CLA CMA	
05235	5205	JMP	OCC
05236	1346	NDTX10, TAD	07773
05237	7510	SPA	
05240	5265	JMP	EXPOK
05241	7200	CLA	
05242	1054	EXPGOOD, TAD	07740
05243	3321	DCA	MPY
05244	7100	CLL	
05245	1020	DVLODP, TAD	AC1
05246	1347	TAD	05400
05247	7500	SMA	
05250	3020	DCA	AC1
05251	7204	CLA CML CMA RAL	
05252	3023	DCA	OP1
05253	4550	JMS I	PAL1
05254	2023	IOZ	OP1
05255	2010	IOZ	AC3

05256	2321	ISZ	MPY
05257	5245	JMP	DVLODP
05260	1020	TAD	AC1
05261	0071	AND	0377
05262	3020	DCA	AC1
05263	7201	CLA	IAC
05264	5205	JMP	OCC
05265	3042	EXPDK,	DCA PRTEMP
05266	7410	SKP	
05267	4547	JMS I	PAR1
05270	2042	ISZ	PRTEMP
05271	5267	JMP	.-2
05272	1020	TAD	AC1
05273	1347	TAD	05400
05274	7700	SMA	CLA
05275	5242	JMP	EXPGOOD
05276	7300	CLA	CLL
05277	1016	TAD	AC3
05300	1344	TAD	02062
05301	3016	DCA	AC3
05302	7430	S.L	
05303	2017	ISZ	AC2
05304	7410	SKP	
05305	2020	ISZ	AC1
05306	1020	TAD	AC1
05307	1347	TAD	05400
05310	7640	SZA	CLA
05311	5600	JMP I	FIXITUP
05312	1155	TAD	0200
05313	3020	DCA	AC1
05314	3017	DCA	AC2
05315	3016	DCA	AC3
05316	2043	ISZ	DECEXP
05317	7000	NOP	
05320	5600	JMP I	FIXITUP
05321	0000	MPY,	0
05322	4550	JMS I	PAL1
05323	1020	TAD	AC1
05324	3023	DCA	OP1
05325	1017	TAD	AC2
05326	3022	DCA	OP2
05327	1016	TAD	AC3
05330	3021	DCA	OP3
05331	4550	JMS I	PAL1
05332	4550	JMS I	PAL1
05333	4557	JMS I	POADD
05334	5721	JMP I	MPY
05335	0000	NUMBUF,	01010101010
05336	0000		
05337	0000		
05340	0000		
05341	0000		
05342	0000		
05343	0000		
05344	2062	02062,	2062

05345 7610 07610, 7610
05346 7773 07773, 7773
05347 5400 05400, 5400

05350 0000 RNDJMP, FEXIT
05351 4546 JMS I PANORM
05352 5753 JMP I RND

05353 0000 RND, 0
05354 4435 FENTER
05355 3227 FLD+FWD+FRNOX=.
05356 0000 FEXIT
05357 1021 TAD OP3
05360 7006 RTL
05361 7006 RTL
05362 7006 R'L
05363 3020 DCA AC1
05364 1020 TAD AC1
05365 7010 RAR
05366 0054 AND 07740
05367 3017 DCA AC2
05370 3016 DCA AC3
05371 4557 JMS I POADD
05372 4557 JMS I POADD
05373 4557 JMS I POADD
05374 1030 TAD OPE
05375 3025 DCA ACE
05376 1020 TAD AC1
05377 0072 AND 07
05400 3020 DCA AC1
05401 4435 FENTER
05402 2202 FST+FWD+FRNOX=.
05403 1633 FJMP+BKWD+,-RNDJMP

05404 2004 FRNOX, 2004/4173/1231
05405 4173
05406 1231

05407 0000 FSQRX, 0/0/0
05410 0000
05411 0000
05412 0000 SQR, 0
05413 4435 FENTER
05414 2073 FST OPERAND
05415 0040 FSNE
05416 1232 FJMP+FWD+SQEXIT=.

25417	0000	FEXIT	
25420	1024	TAD	ACS
25421	7710	SPA	CLA
25422	5447	JMP I	PARGERR
25423	1025	TAD	ACE
25424	1252	TAD	007600
25425	7100	CLL	
25426	7510	SPA	
25427	7020	CML	
25430	7010	RAR	
25431	1155	TAD	D200
25432	3025	DCA	ACE
25433	1055	TAD	07770
25434	3013	DCA	INDEX1
25435	4435	SQLLOOP, FENTER	
25436	2627	FST+BKWD+,-FSQRX	
25437	3073	FLD	OPERAND
25440	7631	FDV+BKWD+,-FSQRX	
25441	4632	FAD+BKWD+,-FSQRX	
25442	0000	FEXIT	
25443	7240	CI 1 CMA	
25444	1025	TAD	ACE
25445	3025	DCA	ACE
25446	2013	ISZ	INDEX1
25447	5235	JMP	SQLLOOP
25450	0000	SGEXIT, FEXIT	
25451	5612	JMP I	SQR
25452	7600	007600, 7600	
25453	0000	FN,	0
25454	1045	TAD	LOCCTR
25455	4504	JMS I	PPUSH
25456	1050	TAD	WORD
25457	4504	JMS I	PPUSH
25460	6201	CDF	0
25461	1745	TAD I	PUSERFN
25462	6211	CDF	10
25463	7001	IAC	
25464	3045	DCA	LOCCTR
25465	4567	GET+ISIT	/'DEF'
25466	1761	1761	
25467	5746	JMP I	PFNERR /NO
25470	4177	JMS	GETWD /SKIP 'FN'
25471	4177	JMS	GETWD /SKIP LETTER
25472	4177	JMS	GETWD /SKIP '('
25473	4567	GET+ISIT	/A VARIABLE
25474	7000	7000	
25475	5746	JMP I	PFNERR /NO
25476	2050	ISZ	WORD
25477	1450	TAD I	WORD
25500	3013	DCA	INDEX1
25501	1413	TAD I	INDEX1
25502	4504	JMS I	PPUSH
25503	1413	TAD I	INDEX1
25504	4504	JMS I	PPUSH
25505	1413	TAD I	INDEX1

//////// 8 K INSERT

//////// 8 K INSERT.

05506	4504	JMS I	PPUSH	
05507	1013	TAO	INOEX1	
05510	4504	JMS I	PPUSH	
05511	7344	CLA CLL	CMA RAL	
05512	1013	TAO	INDEX1	
05513	3013	DCA	INDEX1	
05514	4435	FENTER		
05515	2413	FSTI	INOEX1	
05516	0000	PEXIT		
05517	4177	JMS	GETWD	/SKIP 'J'
05520	4177	JMS	GETWD	/SKIP 'N'
05521	4501	JMS I	PEVAL	
05522	4505	JMS I	PPOP	
05523	3050	DCA	WORD	
05524	4505	JMS I	PPOP	
05525	3450	DCA I	WORD	
05526	7240	CLA CMA		
05527	1050	TAO	WORD	
05530	3050	DCA	WORD	
05531	4505	JMS I	PPOP	
05532	3450	DCA I	WORD	
05533	7240	CLA CMA		
05534	1050	TAO	WORD	
05535	3050	DCA	WORD	
05536	4505	JMS I	PPOP	
05537	3450	DCA I	WORD	
05540	4505	JMS I	PPOP	
05541	3050	DCA	WORD	
05542	4505	JMS I	PPOP	
05543	3045	DCA	LOCCTR	
05544	5653	JMP I	FN	
05545	1620	PUSERFN,USERFN		

05546 0352 PFNERR, FNERR

05547	0000	TAB,	0	/FUNCTION "TAB" IN PRINT STATEMENT.
05550	4506	JMS I	PFIX	/FIX THE FAC NOW.
05551	6201	DDF	0	/SET DATA FIELD TO FIELD ZERO.
05552	7201	CLA IAC		/SET FLAG TO INDICATE WE'VE DONE THIS FUNCTION.
05553	3771	DCA I	PTABFLG	/AND STORE AWAY.
05554	1024	TAO	ACS	/GET SIGN OF FAC
05555	7650	SNA CLA		/WAS IT A POSITIVE NUMBER?
05556	1016	TAO	AC3	/YEP, PICK UP DESIRED POSITION.
05557	0071	ANO	0377	/MAXIMUM OF 256 COLUMNS.
05560	3770	DCA I	PTABDES	/SAVE AWAY FOR ACTUAL SPACER TO USE.
05561	4772	JMS I	TBEGFIX	/PREPARE TO RETURN PRESENT COLUMN NUMBER.

05562	7201	CLA	IAC
05563	1126	TAD	COLUMN
05564	3016	OCA	AC3
05565	6211	ODF	10
05566	4546	JMS	I PANORM
05567	5747	JMP	I TAB

/INCREMENT TO ACCOUNT FOR DIFFERENCES.
/AND STORE AWAY.
/RESET DATA FIELD NOW.
/NORMALIZE AC NOW.
/AND RETURN NOW.

05570	6367	PTABOES,	TABOES
05571	2345	PTABFLG,	TABFLG
05572	3762	TBEGFIX,	BEGFIX

/POINTER TO DESIRED LOCATION OF PRINT HEAD.
/POINTER TO TAB IN PRINT FLAG.
/POINTER TO MINI-FIX-SET-UP ROUTINE.

05573	7201	RUBO,	CLA	IAC
05574	3135	NORUBO,	DC	RBSWCH
05575	5776		JMP	I .+1
05576	7175		DEVCOM	

/SET RUBOUT SWITCH.
/AND CLEAN IT UP.
/CLEAN-UP POINTER.

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05600	0000	TAN,	0
05601	4435		FENTER
05602	2275		FST+FWD+FTANT1=.
05603	0000		FEXIT
05604	4216		JMS COS
05605	4435		FENTER
05606	2274		FST+FWD+FTANT2=.
05607	3270		FLO+FWD+FTANT1=.
05610	0000		FEXIT
05611	4224		JMS SIN
05612	4435		FENTER

05613	7267		FDV+FWD+FTANT2=.
05614	2222		FEXIT
05615	5600		JMP I TAN
05616	2222	COS,	0
05617	4435		FENTER
05620	4312		FAD+FWD+FSINC7=.
05621	0000		FEXIT
05622	4224		JMS SIN
05623	5616		JMP I COS
05624	0000	SIN,	0
05625	4435		FENTER
05626	7265		FDV+FWD+FSINC1=.
05627	2256		FST+FWD+FSINZ=.
05630	0000		FEXIT
05631	3024		DCA ACS
05632	4676		JMS I PINT
05633	7330		CLA CLL CML RAR
05634	0305		AND FSINZ
05635	3024		DCA ACS
05636	4435		FENTER
05637	5246		FSI+FWD+FSINZ=.
05640	6275		FIP+FWD+FSINM4=.
05641	2244	FSIN10,	FST+FWD+FSINZ=.
05642	0000		FEXIT
05643	3024		DCA ACS
05644	4435		FENTER
05645	5151		F8B ONE
05646	0140		F8GT
05647	1210		FJMP+FWD+FSINOK=.
05650	3235		FLD+FWD+FSINZ=.
05651	0000		FEXIT
05652	4675		JMS I P8GN
05653	2025		ISZ ACE
05654	4435		FENTER
05655	5230		F8B+FWD+FSINZ=.
05656	1615		FJMP+BKWD+.=FSIN10
05657	3226	FSINOK,	FLD+FWD+FSINZ=.
05660	6225		FMP+FWD+FSINZ=.
05661	2227		FST+FWD+FSINZZ=.
05662	6234		FMP+FWD+FSINC3=.
05663	4236		FAD+FWD+FSINC4=.
05664	6224		FMP+FWD+FSINZZ=.
05665	4237		FAD+FWD+FSINC5=.
05666	6222		FMP+FWD+FSINZZ=.
05667	4240		FAD+FWD+FSINC6=.
05670	6220		FMP+FWD+FSINZZ=.
05671	4241		FAD+FWD+FSINC7=.
05672	6213		FMP+FWD+FSINZ=.
05673	0000		FEXIT
05674	5624		JMP I SIN
05675	0726	P8GN,	8GN
05676	6434	PINT,	INT
05677	0000	FTANT1,	01010
05700	0000		
05701	0000		

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05702 2200 FTANT2, 01010
05703 2020
05704 0000
05705 2020 FSINZ, 01010
05706 0000
05707 0000
05710 0000 FSINZZ, 01010
05711 0000
05712 0000
05713 2036 FSINC1, 2036/2207/7325
05714 2207
05715 7325
05716 1644 FSINC3, 1644/7553/6722
05717 7553
05720 6722
05721 5714 FSINC4, 5714/6223/1432
05722 6223
05723 1432
05724 1755 FSINC5, 1755/0632/1276
05725 0632
05726 1276
05727 6005 FSINC6, 6005/1256/7406
05730 1256
05731 7406
05732 2016 FSINC7, 2016/2207/7325
05733 2207
05734 7325
05735 6034 FSINM4, 6034/0000/0000
05736 0000
05737 0000
05740 4435 UPARRX, FENTER
05741 2634 FST+BKWD+,-FSINZ
05742 0100 FSGE
05743 1221 FJMP+FWD+EXPLONG=.
05744 0000 FEXIT
05745 4676 JMS I PINT
05746 4435 FENTER
05747 5642 FSB+BKWD+,-FSINZ
05750 0050 FSEQ
05751 1213 FJMP+FWD+EXPLONG=.
05752 3645 FLD+BKWD+,-FSINZ
05753 5207 FSB+FWD+FUPRC1=.
05754 0150 FSLE
05755 1207 FJMP+FWD+EXPLONG=.
05756 3651 FLD+BKWD+,-FSINZ
05757 0000 FEXIT
05760 5761 JMP I ,+1
05761 6457 UPARROW
05762 2077 FUPRC1, 2077/7700
05763 7700
05764 3073 EXPLONG,FLD OPERAND
05765 0000 FEXIT
05766 4775 JMS I PLOG
05767 4435 FENTER
05770 6663 FMP+BKWD+,-FSINZ
```

05771	0000		FEXIT
05772	4776		JMS I PEXP
05773	5774		JMP I ,+1
05774	1203		OPDONE
05775	6114	PLOG,	LOG
05776	6000	PEXP,	EXP

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06000	0000	EXP,	0
06001	4435		FENTER
06002	7270		FDV+FWD+FEXPC1=.
06003	2261		FST+FWD+FEXPU=.
06004	0000		FEXIT
06005	4660		JMS I PPINT
06006	7330		CLA CLL CML RAR
06007	1024		TAD ACS
06010	3024		DCA ACS
06011	4435		FENTER
06012	2247		FST+FWD+FEXPI=.
06013	4251		FAD+FWD+FEXPU=.
06014	2253		FST+FWD+FEXPF=.
06015	6252		FMP+FWD+FEXPF=.
06016	4257		FAD+FWD+FEXPC2=.
06017	2245		FST+FWD+FEXPU=.
06020	3241		FLD+FWD+FEXPI=.
06021	0000		FEXIT
06022	4506		JMS I PPIX
06023	7000	FXXPFX,	NOP / (IAC IF 1 ORG INDEXING)
06024	3261		DCA FEXPI
06025	1024		TAD ACS
06026	7164		CMA CLL CML RAL
06027	1261		TAD FEXPI
06030	7420		SNL
06031	7041		CIA
06032	7001		IAC
06033	3261		DCA FEXPI
06034	4435		FENTER
06035	3243		FLD+FWD+FEXPC3=.
06036	7226		FDV+FWD+FEXPU=.
06037	4244		FAD+FWD+FEXPC4=.
06040	5227		FSS+FWD+FEXPF=.
06041	2223		FST+FWD+FEXPU=.
06042	3225		FLD+FWD+FEXPF=.
06043	6224		FMP+FWD+FEXPF=.
06044	6242		FMP+FWD+FEXPC5=.
06045	4217		FAD+FWD+FEXPU=.

06046	2216		FST+FWD+FEXPU=.
06047	3220		FLD+FWD+FEXPF=.
06050	7214		FOV+FWD+FEXPU=.
06051	4240		FAD+FWD+FEXPC6=.
06052	2215		FST+FWD+FEXPF=.
06053	0000		FEXIT
06054	1025	TAD	ACE
06055	1261	TAD	FEXPI
06056	3025	DCA	ACE
06057	5600	JMP I	EXP
06060	6434	PPINT,	INT
06061	0000	FEXPI,	01010
06062	0000		
06063	0000		
06064	0000	FEXPU,	01010
06065	0000		
06066	0000		
06067	0000	FEXPF,	01010
06070	0000		
06071	0000		
06072	2005	FEXPC1,	21051427110300
06073	4271		
06074	0300		
06075	2075	FEXPC2,	20751355217022
06076	3552		
06077	7022		
06100	6124	FEXPC3,	61241647710715
06101	6477		
06102	0715		
06103	2044	FEXPC4,	20441764310062
06104	7643		
06105	0062		
06106	1744	FEXPC5,	17441337213400
06107	3372		
06110	3400		
06111	2004	FEXPC6,	20041000010000
06112	0000		
06113	0000		
06114	0000	LOG,	0
06115	1024	TAD	ACS
06116	7710	SPA	CLA
06117	5447	JMP I	PARGERR
06120	1025	TAD	ACE
06121	3365	DCA	LOGACE
06122	1155	TAD	0200
06123	3025	DCA	ACE
06124	4435	FENTER	
06125	2641	FST+BKWD+,-FEXPU	
06126	4244	FAD+FWD+FLDGC1=.	
06127	2640	FST+BKWD+,-FEXPF	
06130	3644	FLD+BKWD+,-FEXPU	
06131	5241	F8B+FWD+FLOGC1=.	
06132	7643	FDV+BKWD+,-FEXPF	
06133	2644	FST+BKWD+,-FEXPF	
06134	6645	FMP+BKWD+,-FEXPF	

06135	6216	FMP+FWD+FLOGC2=.
06136	4220	FAD+FWD+FLOGC3=.
06137	6650	FMP+BKWD+.=FEXPF
06142	6651	FMP+BKWD+.=FEXPF
06141	4220	FAD+FWD+FLOGC4=.
06142	6653	FMP+BKWD+.=FEXPF
06143	5632	FSB+BKWD+.=FEXPC6
06144	2655	FST+BKWD+.=FEXPF
06145	3217	FLD+FWD+LOGFWD=.
06146	5221	FSB+FWD+LOGOKW=.
06147	4660	FAD+BKWD+.=FEXPF
06150	6656	FMP+BKWD+.=FEXPC1
06151	0000	FEXIT
06152	5714	JMP I LOG
06153	2004	FLOGC2, 2004;6253;2521
06154	6253	
06155	2521	
06156	2007	FLOGC3, 2007;5421;3604
06157	5421	
06160	3604	
06161	2025	FLOGC4, 2125;6125;1007
06162	6125	
06163	1007	
06164	2174	LOGFWD, 2174
06165	0000	LOGACE, 0
06166	0000	0
06167	2174	LOGOKW, 2174;0200;0
06170	0200	
06171	0000	
06172	2005	FLOGC1, 2005;5202;3632
06173	5202	
06174	3632	

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06200	0000	ATN, 0
06201	1024	TAD ACS
06202	3272	DCA FATNSX
06203	3024	DCA ACS
06204	4435	FENTER
06205	2271	FST+FWD+FATNT=.
06206	2265	FST+FWD+FATNAX=.
06207	5275	FSB+FWD+FATNC1=.
06210	0140	FSGT
06211	1254	FJMP+FWD+ATNBIG=.

06212	5275	FSB+FWD+FATNC2=.
06213	0140	FSGT
06214	1204	FJMP+FWD+ATNLOW=.
06215	3151	FLD ONE
06216	7260	FDV+FWD+FATNT=.
06217	2257	FST+FWD+FATNT=.
06220	3152	ATNLOW, FLD ZERO
06221	2316	FST+FWD+FATNC=.
06222	3254	FLD+FWD+FATNT=.
06223	5267	FSB+FWD+FATNC3=.
06224	0100	FSGE
06225	1212	FJMP+FWD+ATNNOT=.
06226	3250	FLD+FWD+FATNT=.
06227	4266	FAD+FWD+FATNC4=.
06230	2246	FST+FWD+FATNT=.
06231	3314	FLD+FWD+FATNCJ=.
06232	7244	FDV+FWD+FATNT=.
06233	4262	FAD+FWD+FATNC4=.
06234	2242	FST+FWD+FATNT=.
06235	3263	FLD+FWD+FATNC5=.
06236	2301	FST+FWD+FATNC=.
06237	3237	ATNNOT, FLD+FWD+FATNT=.
06240	6236	FMP+FWD+FATNT=.
06241	2240	FST+FWD+FATNTT=.
06242	3261	FLD+FWD+FATNC6=.
06243	6236	FMP+FWD+FATNTT=.
06244	4262	FAD+FWD+FATNC7=.
06245	6234	FMP+FWD+FATNTT=.
06246	4263	FAD+FWD+FATNC8=.
06247	6232	FMP+FWD+FATNTT=.
06250	4264	FAD+FWD+FATNC9=.
06251	6230	FMP+FWD+FATNTT=.
06252	4151	FAD ONE
06253	6223	FMP+FWD+FATNT=.
06254	4263	FAD+FWD+FATNC=.
06255	2221	FST+FWD+FATNT=.
06256	3215	FLD+FWD+FATNAX=.
06257	5151	FSB ONE
06260	0140	FSGT
06261	1204	FJMP+FWD+ATNBIG=.
06262	3260	FLD+FWD+FATNCH=.
06263	5213	FSB+FWD+FATNT=.
06264	2212	FST+FWD+FATNT=.
06265	3211	ATNBIG, FLD+FWD+FATNT=.
06266	0000	FEXIT
06267	1272	TAD FATNSX
06270	3024	DCA ACS
06271	5600	JMP I ATN
06272	0000	FATNSX, 0
06273	0000	FATNAX, 01010
06274	0000	
06275	0000	
06276	0000	FATNT, 01010
06277	0000	
06300	0000	

06301	0000	FATNTT, 01010
06302	0000	
06303	0000	
06304	1634	FATNC1, 16341000010000
06305	0000	
06306	0000	
06307	2007	FATNC2, 20071777610000
06310	7776	
06311	0000	
06312	1774	FATNC3, 17741223012427
06313	2230	
06314	2427	
06315	2016	FATNC4, 20161733117272
06316	7331	
06317	7272	
06320	2004	FATNC5, 20041140512216
06321	1405	
06322	2216	
06323	1756	FATNC6, 17561046214562
06324	0462	
06325	4562	
06326	5764	FATNC7, 57641422113403
06327	4221	
06330	3403	
06331	1766	FATNC8, 17661314116672
06332	3141	
06333	6672	
06334	5775	FATNC9, 57751252512337
06335	2525	
06336	2337	
06337	0000	FATNC, 01010
06340	0000	
06341	0000	
06342	2016	FATNCJ, 20161220717325
06343	2207	
06344	7325	
06345	6034	FATNCJ, 60341000010000
06346	0000	
06347	0000	

06350	1126	TABDO,	TAD	COLUMN
06351	7041		CIA	
06352	1367		TAD	TABDES
06353	7740		SMA SZA	CLA
06354	5300		JMP	TABOK

/GET WHERE WE ARE NOW.

/COMPARE AGAINST WHERE WE WANT TO BE.
/DO WE HAVE TO BACK UP?
/NOPE.

26355	1007	TAD	0215	/YEP, GIVE C.R.
26356	4433	JMS I	PPUTCH	/SEND IT
26357	4433	JMS I	PPUTCH	/ALSO SEND A NULL CHARACTER TO ALL TTY TO RETURN.
26360	1126	TABOK, TAD	COLUMN	/GET WHERE WE ARE.
26361	7040	CMA		/NEGATE-1
26362	1367	TAO	TABOES	/WHERE DO WE WANT TO BE?
26363	7758	SNA SPA	CLA	/?
26364	5770	JMP I	TPRINT	/HERE, EXIT.
26365	1051	TAD	0240	/FARTHER UP.
26366	5357	JMP	TABOK-1	/GIVE SPACE AND LOOP AGAIN.
26367	0000	TABOES, 0		
26370	2207	TPRINT, PRINTC		/NORMAL EXIT LOCATION.

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06400 0000 CHKFIT, 0
06401 1160      TAD      04
06402 4544      JMS I   SPLEFT
06403 5600      JMP I   CHKFIT
06404 4561      JMS I   PLINFIX
06405 4537      JMS I   PRESET
06406 4514      JMS I   PPRINTXT
06407 3562      UPR 1
06410 3064      DLA      SNUMFLG
06411 5612      JMP I   .+1
06412 2610      NEWLIN

/RESET ALL I/O DEVICES,
/RESET THIS FLAG NOW
/THIS MAY BE RIGHT,

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```

06413 0000 RMLEFT, 0
06414 7100      CLL
06415 1003      TAD      ARRLOC
06416 7430      SZL
06417 5223      JMP      NORLFT
06420 7041      CIA
06421 1004      TAD      CODELOC
06422 7620      SNL CLA
06423 2213      NORLFT, ISZ
06424 5613      JMP I   RMLEFT

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06425 0000 ABS, 0
06426 3024      OCA      ACS
06427 5625      JMP I   ABS

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26430	2200	STICKIT,0		
26431	3403		DCA I	ARRLOC
26432	2003		ISZ	ARRLOC
26433	5630		JMP I	STICKIT

26434	0000	INT,	0	
26435	4506		JMS I	PFIX
26436	7200		CLA	
26437	4546		JMS I	PANORM
26440	5634		JMP I	INT

26441	0000	5XERR,	0		/INCASE THIS IS JMS'D TO,
26442	7200		C.A		
26443	3241		DCA	5XERR	/AND REMAKE INTO AN "AND"
26444	4477		JMS I	PERROR	
26445	2331		TEXT	'SYNTAX'	
26446	1624				
26447	0130				
26450	0000				
26451	4001	ATLINE,	TEXT	' AT LINE '	
26452	2440				
26453	1411				
26454	1605				
26455	4000				

06456	7570	07570,	7570	
06457	1024	UPARROW,	TAD	ACS
06460	7700		SMA CLA	
06461	1256		TAD	07570
06462	1025		TAD	ACE
06463	7700		SMA CLA	
06464	5447		JMP I	PARGERR
06465	4506		JMS I	PFIX
06466	5667		JMP I	.+1
06467	4365		UPARR2	

```
06472 4570 MOREDIM,MUSTBE      /','  
06471 3763      3763  
06472 7240 DIM,      CLA CMA  
06473 3034      DCA      DIMFLAG  
06474 4501      JMS I      PEVAL  
06475 4566      ISIT      /((CR) OR '\'  
06476 2000      2000  
06477 5270      JMP      MOREDIM  
06500 5503      JMP I      PEXECUTE/YES
```

```
06501 4004 DELETED,TEXT ' DELETED_1'  
06502 0514  
06503 0524  
06504 0504  
06505 3700
```

```
06506 1050 AMATCH, TAD      WORD  
06507 3064      DCA      SNUMFLG  
06510 1064      TAD      SNUMFLG  
06511 3457      DCA I      FPTR  
06512 2057      ISZ      FPTR  
06513 1060      TAD      GPTR  
06514 3056      DCA      EPTR  
06515 4566      ISIT      /'REM'  
06516 1762      1762  
06517 5516      JMP I      PSLOOP  
06520 5721      JMP I      .+1  
06521 3043      REMPack
```

```
06522 3723 BREAK, 3723/2417/2056  
06523 2417  
06524 2056  
06525 3722 READY, TEXT '_READY._11'  
06526 0501  
06527 0431  
06530 5637  
06531 3700
```

6531 CRLF=-1

```

06532 0000 ISDIG, 0
06533 4522 JMS I PNONBLNK
06534 1344 TAD 07706A
06535 7100 CLL
06536 1065 TAD 012
06537 7420 SNL
06540 7200 CLA
06541 7430 SZL
06542 2332 IS7 ISDIG
06543 5732 JIP I ISDIG
06544 7706 07706A, 7706

```

```

06545 1042 PZERDON, TAD PRTEMP
06546 1043 TAD DECEXP
06547 7710 SPA CLA
06550 5354 JMP .+4
06551 1043 TAD DECEXP
06552 7040 CMA
06553 3042 DCA PRTEMP
06554 1044 TAD PNUMBUF
06555 3025 DCA ACE
06556 7344 CLA CLL CMA RAL
06557 7040 DIGLUP, CMA
06560 1043 TAD DECEXP
06561 7440 SZA
06562 5365 JMP .+3
06563 1375 TAD 0256B
06564 4433 JMS I PPUTCH
06565 3043 DCA DECEXP
06566 1425 TAD I ACE
06567 4433 JMS I PPUTCH
06570 2025 ISZ ACE
06571 2042 ISZ PRTEMP
06572 5357 JMP DIGLUP
06573 5774 JMP I .+1
06574 5123 PNTENP

```

/***** 8 K INSERT RETURN.

06575 0256 0256B, 256

6600

PAGE

6661
6662
6666LSP=6661
LCF=6662
LLS=6666

06600	3334	INTER,	DCA	INTAC	/SAVE ALL IMPORTANT STUFF ON INTERRUPT.
06601	7010		RAR		
06602	3335		DCA	INTL	
06603	6234		RIB		
06604	0374		AND	070	
06605	1375		TAO	06202	
06606	3371		DCA	INTCIF	/SAVE INSTRUCTION FIELD
06607	6234		RIB		
06610	0072		AND	07	
06611	7106		CLL	RTL	/SHIFT IT OVER

26612	7004	RAL		
26613	1215	TAD	06201A	/AND THE INSTUCTION FIELD
26614	3370	OCA	INTCDF	
26615	6201	06201A, CDF	0	/JUST IN CASE.
26616	7000	IFZERO	MACHINE4	
		NOP		/TO KEEP PAGE SAME SIZE.
		IFNZRO	MACHINE4	
		JMS I	SPECINT	/CHECK FOR SPECIAL INTERRUPT DEVICE.
26617	6041	TSF		/IS IT THE TELEPRINTER.
26620	5223	JMP	,+3	/NO
26621	6042	TCF		
26622	5310	JMP	INODUN	/YEP, CLEAN IT UP,
26623	6661	LSF		/PRINTER?
26624	5227	JMP	,+3	
26625	6662	LCF		/YEP.
26626	5310	JMP	INODUN	
26627	6021	PCF		/PUNCH?
26630	5233	JMP	,+3	
26631	6022	PCF		
26632	5310	JMP	INODUN	
26633	6011	RSP		/READER?
26634	5241	JMP	INOPPP	/NOPE.
26635	7330	CLA CLL	CML RAR	/4000 TO AC
26636	6012	RRB		/READ IN THE CHARACTER.
26637	3740	OCA I	PHRCHAR	
26640	5344	JMP	INTEXT	/EXIT FROM THE INTERRUPT.
26641	6663	INOPPP,	6663	/LINE PRINTER ERROR?
26642	5245	JMP	INOTTT	/NOPE.
26643	6667		6667	/YEP, INGORE THE LINE PRINTER NOW.
26644	5344	JMP	INTEXT	/AND EXIT.
26645	6031	INOTTT,	KSF	/IS IT THE KEYBOARD.
26646	7402	HLT		/NOPE. A BAOOY. WE'RE F--KEO.
26647	6036	KRB		/READ IN THE CHARACTER.
26650	0027	ANO	0177	/CHOP OFF THE CRAP.
26651	3336	OCA	INTEMP	/SAVE IN THE INTERRUPT TEMPORARY.
26652	1336	TAD	INTEMP	/RECALL IT NOW, BUBBY.
26653	1376	TAD	07775	/IS IT A "C
26654	7450	SNA		/?
26655	5265	JMP	FCNTLC	/YES!
26656	1377	TAD	077640	/^0?
26657	7650	SNA CLA		
26660	5303	JMP	FCNTLO	
26661	7330	CLA CLL	CML RAR	
26662	1336	TAD	INTEMP	/SET HIGH ORDER BIT ON FOR SAFETY.
26663	3741	OCA I	PINCHAR	/PUT IT AWAY
26664	5344	JMP	INTEXT	/AND EXIT FROM INTERRUPT.
26665	1134	FCNTLC, TAD	NOINT	/CHECK IF OK TO INTERRUPT.

26666	7640	SZA	CLA		
26667	5300	JMP	CNTLCF		/NOT OK.
26670	6002	CNTLCR,	IOF		/TURN OFF INTERRUPTS TO BE SURE.
26671	4542	JMS I	DELOUT		/DELETE OUTPUT BUFFERS.
26672	4537	JMS I	PRESET		/RESET ALL I/O DEVICES.
26673	4514	JMS I	PPRINTXT		/GIVE THE STOP MESSAGE
26674	6522	BREAK			/I DON'T LIKE "THOSE PEOPLE" LOOKING OVER MY SHOULDER WHILE I TYPE.
26675	1125	TAD	PPDLIST		/RESET PUSH DOWN POINTER
26676	3036	DCA	PDL		
26677	5520	JMP I	PEDIT		/AND RESTART CISAB
26700	7040	CNTLCF,	CMA		/RESET "C FOUND SWITCH.
26701	3134	DCA	NOINT		
26702	5344	JMP	INTEXT		
26703	4542	FCNTLO,	JMS I	DELOUT	/DELETE THE OUTPUT NOW, BABY.
26704	1133	TAD	CNTLO		/NEGATE CNTLO SWITCH.
26705	7040	CMA			
26706	3133	DCA	CNTLO		
26707	5344	JMP	INTEXT		
26710	3742	INODUN,	DCA I	POFLAG	/RESET OUTPUT FLAG.
26711	4743	JMS I	POUIT		/PERFORM THE NEXT OPERATION.
26712	5344	JMP	INTEXT		
26713	0000	BIDLE,	0		/THE IDLE ROUTINE
26714	6002	IOF			
26715	7201	CLA	IAC		
26716	3337	DCA	BUSY		/RESET THE IDLE TASK FLAG.
26717	6214	RDF			/SAVE THE DATA FIELD NOW.
26720	1215	TAD	06201A		
26721	3362	DCA	INTECDP		/AND PLACE IN WHERE TO GO ON IDLE EXIT.
26722	1331	TAD	IDLELK		/RESTORE THE IDLE ROUTINES PARAMETERS.
26723	7104	CLL	RAL		
26724	1332	TAD	IDLEAC		
26725	6211	IDLECD,	CDP	10	
26726	6202	IDLECI,	CIF	0	
26727	6001	ION			
26730	5733	JMP I	IDLEPC		/AND DO THE IDLE STUFF
26731	0000	IDLELK,	0		
26732	0000	IDLEAC,	0		
26733	7415	IDLEPC,	NULJOB		
26734	0000	INTAC,	0		
26735	0000	INTL,	0		
26736	0000	INTMP,	0		
26737	0000	BUSY,	0		
26740	7256	PHRCHAR,	HRCHAR		
26741	7255	PINCHAR,	INCHAR		

06742 7100 POFLAG, OFLAG
06743 7043 POUTIT, OUTIT

06744 1337 INTXT, TAD BUSY
06745 7650 SNA CLA
06746 5365 JMP INTOU
06747 3337 DCA BUSY
06750 1000 TAD 0
06751 3333 DCA IOLEPC
06752 1334 TAD INTAC
06753 3332 DCA IOLEAC
06754 1335 TAD INTL
06755 3331 DCA IOLELK
06756 1371 TAD INTCIF

/GET STATUS,

/WE WERE NOT IDLE. EXIT NOW.
/RESET BUSY FLAG,

/SAVE SH-T.

06757	3326		DCA	IDLECIF	
06760	1370		TAD	INTCDF	
06761	3325		DCA	IDLECOF	
06762	7402	INTECO,	HLT		/IDLE ROUTINES CALLING CDF.
06763	6001		ION		
06764	5713		JMP I	BIDLE	/AND GO BACK NOW.

06765	1335	INTOU,	TAD	INTL	
06766	7104		CLL RAL		
06767	1334		TAD	INTAC	
06770	7402	INTCDF,	HLT		
06771	7402	INTCIF,	HLT		
06772	6001		ION		
06773	5400		JMP I	0	

06774	0070	070,	70	
06775	6202	06202,	6202	
06776	7775	07775,	7775	
06777	7764	077640,	7764	

7000

PAGE

07000	0000	PUTER,	0	
07001	3241		DCA	OPUTC

/THE CHARACTER PUTTER.
/SAVE THE CHARACTER NOW.

27222	6214	RDF		/READ THE DATA FIELD NOW.
27223	1225	TAD	062018	/CREATE PROPER CDF INSTRUCTION.
27224	3237	DCA	PUTCDF	/SAVE CDF INSTRUCTION.
27225	6221	062018, CDF	0	/RESET CDF TO THIS DATA FIELD.
27226	7410	SKP		
27227	4761	PUTLP, JMS I	PBIDLE	/CALL IN THE IDLE ROUTINE NOW.
27210	1242	TAD	OCOUNT	/GET NUMBER OF CHARACTERS IN THE BUFFER.
27211	7450	SNA		
27212	5223	JMP	PUTCIN	/PUT IT IN NOW, BABY.
27213	1315	TAD	OCMLIM	/TEST FOR TOO MANY IN BUFFER.
27214	7650	SNA CLA		
27215	5207	JMP	PUTLP	/YEP. WAIT AWHILE.
27216	1131	TAD	OUTDEV	
27217	7041	CIA		
27220	1132	TAD	ODEV	/CHECK FOR A MATCH.
27221	7640	SZA CLA		
27222	5207	JMP	PUTLP	/NOPE. WAIT FOR BUFFER TO BECOME EMTPY.
27223	6002	PUTCIN, IOF		/TURN THEM OFF, BABY.
27224	1133	TAD	CNTLO	/CHECK FOR CONTROL "0" ACTIVE.
27225	7650	SNA CLA		
27226	1131	TAD	OUTDEV	/MOVE OVER OUTPUT DEVICE.
27227	3132	DCA	ODEV	
27230	2242	ISZ	OCOUNT	
27231	1241	TAD	OPUTC	/STICK A CHARACTER IN THE BUFFER.
27232	3634	DCA I	IPOINT	
27233	4301	JMS	OBOP	/BOP UP THE POINTER NOW.
27234	1165	IPOINT, OBLW		
27235	4243	JMS	OUTIT	/SEND IT OUT
27236	6001	ION		/RESTORE INTERRUPTS.
27237	7402	PUTCDF, HLT		/USER'S CORRECT CDF
27240	5600	JMP I	PUTER	
27241	0000	OPUTC, 0		
27242	0000	OCOUNT, 0		
27243	0000	OUTIT, 0		
27244	1300	TAD	OFLAG	
27245	7640	SZA CLA		
27246	5643	JMP I	OUTIT	/FLAG STILL UP. EXIT.
27247	1242	TAD	OCOUNT	
27250	7450	SNA		
27251	5643	JMP I	OUTIT	/NO CHARS TO GO. SO WE WILL.
27252	1314	TAD	07777	/PLEASE IGNORE THE COMMENTS OF A DERANGED MIND.
27253	3242	DCA	OCOUNT	
27254	1132	TAD	ODEV	
27255	1273	TAD	OPOTAB	/MAP DEVICE INTO TABEL TOO ET WHAT TO DO.
27256	3300	DCA	OFLAG	/AND ALSO RESET FLAG AT THE SAME TIME.
27257	1700	TAD I	OFLAG	/GET THE MAGIC INSTRUCTION.
27260	3262	DCA	.+R	/AND PLACE IT HERE.
27261	1665	TAD I	OPPOINT	/GET THE CHARACTER.
27262	7402	HLT		/AND HALT.
27263	7200	CLA		/AFTER PRINTING THE CHARACTER,

```

27264 4321 JMS OBOP
27265 1165 OPOINT, OBLOW
27266 5643 JMP I OUTIT

27267 7200 OPNUL, CLA
27270 3300 DCA DFLAG
27271 4542 JMS I DELOUT
27272 5643 JMP I OUTIT

27273 7074 OPOTAB, .+1
27274 5267 JMP OPNUL
27275 6046 TLS
27276 6026 PLS
27277 6666 LLS

```

/WE SHALL INCREMENT THE POINTER.

/AND EXIT.

/RESET OFLAG

/SO DEVICES INACTIVE.

/DELETE ANY STRAY CHARACTERS IN THE BUFFER.

/AND RETURN NOW.

```

27100 0000 OFLAG, 0

```

```

27101 0000 OBOP, 0
27102 1701 TAD I OBOP
27103 1312 TAD OTST1
27104 7450 SNA
27105 1315 TAD OFLOW
27106 1313 TAD OCOR
27107 3701 DCA I OBOP
27110 2301 ISZ OBOP
27111 5701 JMP I OBOP

```

```

27112 6601 OTST1, -OBHIGH
27113 1200 OCOR, OBHIGH+1

```

```

27114 7777 07777, 7777

```

```

27115 7765 OFLOW, -OBHIGH-1+OBLOW
7115 OCMLIM=OFLOW

```

```

27116 0000 RESET1, 0
27117 7201 CLA IAC
27120 3131 DCA OUTDEV
27121 7201 CLA IAC
27122 3130 DCA OUTD2
27123 7201 CLA IAC
27124 3127 DCA INDEV
27125 3133 DCA CNTLO
27126 3134 DCA NOINT
27127 6201 CDF 0
27130 3756 DCA I QHRCHAR
27131 3762 DCA I SINCHAR
27132 3757 DCA I PBUSY
27133 3760 DCA I PPXRA

```

/CLEAR NO-INTERUPT FLAG.

/RESET DATA FIELD TO HERE.

/CLEAR ALL INPUT FLAGS.

/AND ALSO THE BUSY FLAG.

/RESET NULL AFTER C.R. FLAG.

IFNZRO MACHINE<
CIF CDF 10
JMS I LLLUUU
>

/PREPARE TO RESET CLOCK.
/RESET CLOCK NOW (OR RATHER A-D BUFFER).

27134 6211 IFZERO MACHINE<
27135 6221 CDF 10
ION
>

27136 6665 6665
27137 5716 JMP I RESET1

/TELL LPT IT'S OK TO INTERRUPT NOW.

27140 2352 LLLUUU, UUULLL

/POINTER TO UPPER CORE RESETER.

27141 0000 RESET2, 0
27142 4537 JMS I PRESET
27143 4542 JMS I DELOUT
27144 3300 OCA OFLAG
27145 5741 JMP I RESET2

27146 0000 OUTOEL, 0
27147 3242 OCA OCOUNT
27150 1355 TAD OPRST
27151 3265 OCA OPOINT
27152 1355 TAD OPRST
27153 3234 OCA IPOINT
27154 5746 JMP I OUTOEL

27155 1165 OPRST, OBLOW
27156 7256 QHRCHAR, HRCHAR
27157 6737 PBUSY, BUSY
27160 2776 PPXRA, PUTXRA
27161 6713 PBIDLE, BIDDLE
27162 7255 SINCHAR, INCHAR

07163	7201	LPTOUT,	CLA	IAC	/LINE PRINTER OUTPUT
07164	7001	PTPOUT,	IAC		/PUNCH OUT
07165	7001	TTYOUT,	IAC		/TTY OUT
07166	3131		DCA	OUTDEV	/AND SET IT UP
07167	1131		TAD	OUTDEV	/ALSO MOVE OVER TO SECONDARY DEVICE.
07170	3130		DCA	OUTD2	
07171	5375		JMP	DEVCOM	/AND CHECK FOR END.
07172	7201	PTRIN,	CLA	IAC	
07173	7001	TTYIN,	IAC		
07174	3127		DCA	INDEV	
07175	4177	DEVCOM,	JMS	GETWD	
07176	4570	DEVCON,	MUSTEE		
07177	2000		2000		/C.R. OR \
07200	5503		JMP I	PEXECUTE	

07221	2000	GETCH,	0		
07222	4270		JMS	GWHERE	
07223	4657		JMS I	QBIDLE	
07224	1255		TAD	INCHAR	

07205	7450		SNA	
07206	5203		JMP	GETCH+2
07207	2227		AND	0177
07210	3254		DCA	GTEMP
07211	3255		DCA	INCHAR
07212	3256		DCA	HRCHAR
07213	1135		TAD	RBSWCH
07214	7650		SNA	CLA
07215	5224		JMP	GRB
07216	1254		TAD	GTEMP
07217	1260		TAD	07601
07220	7640		SZA	CLA
07221	5224		JMP	GRB
07222	1261	GRDELA,	TAD	0137
07223	5601		JMP I	GETCH
07224	1254	GRB,	TAD	GTEMP
07225	1055		TAD	07770
07226	7450		SNA	
07227	5222		JMP	GRDELA
07230	1262		TAD	07612
07231	7450		SNA	
07232	5247		JMP	GALT
07233	1266		TAD	0143
07234	7650		SNA	CLA
07235	5247		JMP	GALT
07236	1254		TAD	GTEMP
07237	1263		TAD	07640C
07240	7510		SPA	
07241	5251		JMP	GOUT
07242	1264		TAD	07746
07243	7500		SMA	
07244	5251		JMP	GOUT
07245	1265		TAD	0132
07246	5601		JMP I	GETCH
07247	1267	GALT,	TAD	0175
07250	5601		JMP I	GETCH
07251	7200	GOUT,	CLA	
07252	1254		TAD	GTEMP
07253	5601		JMP I	GETCH
07254	0000	GTEMP,	0	
07255	0000	INCHAR,	0	
07256	0000	HRCHAR,	0	
07257	6713	00IDLE,	0IOLE	
07260	7601	07601,	7601	
07261	0137	0137,	137	
07262	7612	07612,	7612	
07263	7640	07640C,	7640	
07264	7746	07746,	7746	

07265 0132 0132, 132
 07266 0143 0143, 143
 07267 0175 0175, 175

07270	0000	GWHERE, 0		
07271	7240	CLA CMA		
07272	1127	TAD INDEV		
07273	2270	ISZ GWHERE		
07274	7750	SPA SNA CLA		
07275	5670	JMP I GWHERE	/INPUT=TTY	
07276	1264	TAD 07746		
07277	3254	DCA GTEMP		
07300	3256	DCA HRCHAR		
07301	6014	RFC	/START THE READER NOW,	
07302	1256	HRLOP, TAD HRCHAR		
07303	7440	SZA		
07304	5321	JMP HFOUND	/GOT IT,	
07305	2255	ISZ INCHAR		
07306	5302	JMP HRLOP		
07307	2254	ISZ GTEMP		
07310	5302	JMP HRLOP		
07311	7201	CLA IAC		
07312	3131	DCA OUTDEV	/RESET OUTPUT DEVICE FOR A SECOND,	
07313	3133	DCA CNTLO	/RESET THE CONTRDL "D" SWITCH ALSO,	
07314	4514	JMS I PPRINTXT	/GIVE THE MESSAGE,	

07315	7323	HRMES	
07316	7281	CLA IAC	
07317	3127	DCA	INDEV
07322	5670	JMP I	GWHERE

07321	2270	HFOUND, ISZ	GWHERE
07322	5670	JMP I	GWHERE

07323	3724	HRMES, TEXT	'_TTY_'
07324	2431		
07325	3700		

07326	0000	COWT,	0		/THIS ROUTINE WAITS FOR OUTPUT TO STOP.
07327	6201	COF	0		/SET O.F. TO THIS FIELD.
07330	3742	DCA I	CCXRA		/SET OR RESET NULL AFTER C.R. FLAG.
07331	1743	COWTLP, TAD I	COWTFP		/GET OUTPUT FLAG STATUS.
07332	6211	COF	10		/RESET O.F.
07333	7650	SNA CLA			/IS OUTPUT DONE?
07334	5340	JMP	COWTO		/YEP, EXIT.
07335	4744	JMS I	COWTW		/NOPE. IDLE LOOP TILL INTERRUPT.
07336	6201	COF	0		/RESET O.F. TO ZERO.
07337	5331	JMP	COWTLP		/AND LOOP.
07340	3133	COWTO, OCA	CNTLO		/CLEAR CONTROL 0 STATE.
07341	5726	JMP I	COWT		

07342	0776	CCXRA, PUTXRA
07343	7100	COWTFP, OFLAG
07344	6713	COWTW, BIOLE

```
07345 0000 XGMUST, 0
07346 4177 JMS GETWD
07347 1345 TAD XGMUST
07352 3352 OCA XMUST
07351 5353 JMP XMUST+1
07352 0000 XMUST, 0
07353 1450 TAD I WORD
07354 6201 CDF 0 ////////////// 8 K INSERT.
07355 1752 TAD I XMUST
07356 6211 CDF 10 ////////////// 8 K INSERT.
07357 2352 ISZ XMUST
07360 7650 SNA CLA
07361 5752 JMP I XMUST
07362 5500 JMP I PSXERR
```

```
07363 4477 ARGERR, JMS I PERROR
07364 0122 TEXT 'ARGUMENT'
07365 0725
07366 1505
07367 1624
07370 0000
07371 5660 DOTZERO,TEXT '.0'
07372 0000
```

```
07373 4477 RTERR, JMS I PERROR //GIVE RATE ERROR FOR CLOCK.
07374 2201 TEXT 'RATE'
07375 2405
07376 0000
```

7400

PAGE

IFZERO MACHINE<
NOPUNCH>

07400	1136	PLOT,	TAD	DISB	/GET BUFFER ADDRESS.
07401	7640		SZA	CLA	/IS THERE ONE?
07402	5220		JMP	DBGOT	
07403	1240		TAD	PASSUME	/GET ASSUMMED LENGTH.
07404	4544		JMS I	SPLEFT	/ROOM LEFT TO FIT IT IN.
07405	7410		SKP		
07406	5755		JMP I	NPSERR	/ND.
07407	1003		TAD	ARRLOC	/GET A USABLE ADDRESS.
07410	3311		DCA	DLAST	/SAVE AWAY.
07411	1003		TAD	ARRLOC	/NOW UPDATE OUR ARRAY.
07412	1240		TAD	PASSUME	
07413	3003		DCA	ARRLOC	
07414	7240		CLA	CMA	
07415	1003		TAD	ARRLOC	/GET LAST WORD OF OUR BUFFER NOW.
07416	3312		DCA	DDLAST	/AND GO.
07417	4314		JMS	PLOTB	/FIGURE OUT OUR CRAP NOW.
07420	3313	DBGOT,	DCA	DBAD	/TELL IT POINT IS ON SCREEN
07421	4177		JMS	GETWD	/GET NEXT SYNTATICAL ELEMENT.
07422	4641		JMS I	PMEVAL	/EVALUATE OUR EXPRESSION.
07423	4435		FENTER		
07424	6217		FMP+FSHIFT+FWD=,		/CORRECT NUMBER FOR SYMETRICAL SCREEN.

```

07425 0000 FEXIT
07426 4326 JMS DBLIT /PUT IT IN THE BUFFER.
07427 4641 JMS I PMEVAL /GET Y COORDINATE.
07430 4326 JMS DBLIT /PUT IT IN THE BUFFER.
07431 1313 TAD DBAD /IS IT A BAD ONE? <OFF SCREEN?>
07432 7041 CIA
07433 1311 TAD DINP
07434 3311 DCA DINP
07435 7330 CLA CLL CML RAR /4000=END OF BUFFER CHARACTER.
07436 3711 DCA I DINP
07437 5642 JMP I PDEVCON

```

```

07440 1750 PASSUME,1750
07441 7415 PMEVAL, MEVAL
07442 7176 PDEVCON,DEVCON
07443 2007 FSHIFT, 2007/1600/0000 /MAGIC CONSTANT FOR SYMETRICAL SCREEN.
07444 1600
07445 0000

```

```

07446 1136 USE, TAD DISB /IS OISPLAY BUFFER ASSIGNED.
07447 7640 SZA CLA
07450 5661 JMP I USKIPIT /YES, EXIT.
07451 4262 JMS GETARY /GET THE ARRAY DATA
07452 1020 TAD AC1 /GET FIRST FREE LOCATION
07453 3311 DCA DLAST
07454 1017 TAD AC2 /GET SECONO FREE LOCATION
07455 3312 DCA DDLAST /SAVE AWAY.
07456 4314 JMS PLOTB /SET UP STUFF.
07457 4177 JMS GETWD /GET NEXT ELIMAENT AFTER VARIABLE.
07460 5642 JMP I PDEVCON
07461 0467 USKIPIT,SKIPIT

```

```

07462 0000 GETARY, 0 /THIS ROUTINE GETS THE FIRST AND LAST LOCATIONS OF AN ARRAY.
07463 4571 GET+MUSTBE /MUST BE A VARIABLE.
07464 7000 7000
07465 1050 TAD WORD /GET POINTER TO VARIABLE.
07466 3302 DCA UVP
07467 2050 ISZ WORD
07470 1450 TAD I WORD /GET POINTER NOW.
07471 7001 IAC
07472 3020 DCA AC1 /SAVE AWAY.
07473 2050 ISZ WORD
07474 1450 TAD I WORD
07475 3303 DCA UIP
07476 2050 ISZ WORD
07477 1450 TAD I WORD
07500 3304 DCA U2P
07501 4502 JMS I PGETADD
07502 0000 UVP, 0
07503 0000 UIP, 0

```

```

07504 0000 U2P, 0
07505 7326 CLA CLL CML RTL /+2
07506 1067 TAD ADDRESS
07507 3017 DCA AC2
07510 5662 JMP I GETARY

```

```

07511 0000 DLAST, 0
07511 7511 DINP=DLAST
07512 0000 DDLAST, 0
07513 0000 DBAD, 0

```

```

07514 0000 PLOTB, 0
07515 7240 CLA CMA
07516 1311 TAD DLAST
07517 3136 DCA DISB
07520 1325 TAD 04001
07521 3712 DCA I DDLAST
07522 7330 CLA CLL CML RAR
07523 3711 DCA I DLAST
07524 5714 JMP I PLDTB

```

```

07525 4001 04001, 4001

```

```

07526 0000 DBLIT, 0
07527 1024 TAD AC8
07530 7700 SMA CLA
07531 5335 JMP ,+4
07532 7326 DBBAD, CLA CLL CML RTL
07533 3313 DCA DBAD
07534 5347 JMP DBISRT

```

07535	1025	TAD	ACE
07536	1354	TAD	07577B
07537	7700	SMA CLA	
07540	5332	JMP	DBBAD
07541	1225	TAD	ACE
07542	1065	TAD	012
07543	3025	DCA	ACE
07544	4506	JMS I	PPIX
07545	7200	CLA	
07546	1016	TAD	AC3
07547	4356	DBISRT, JMS	DBPUT
07550	7330	CLA CLL	CML RAR
07551	2311	ISZ	DINP
07552	4356	JMS	DBPUT
07553	5726	JMP I	OBLIT

07554 7577 07577B, 7577
07555 0370 NPSPERR, SPACERR

07556	0000	DBPUT, 0	
07557	3017	DCA	AC2
07560	7350	CLA CLL	CMA RAR
07561	1711	TAD I	DINP
07562	7650	SMA CLA	
07563	5755	JMP I	NPSPERR
07564	1017	TAD	AC2
07565	3711	DCA I	DINP
07566	5756	JMP I	DBPUT

/4001=3777

/NO ROOM IN BUFFER, BOMB HIM.

07567	4477	UUDATA, JMS I	PERROR
07570	0155	TEXT	'A-D FULL'
07571	0440		
07572	0625		
07573	1414		
07574	0000		

ENPUNCH

IFNZRD MACHINE4

PAGE
>

7400

IFZERO MACHINE<
>PLOT>

07400	0000	SETUP,	0	
07401	1005	TAD	PSYMTAB	
07402	3056	DCA	EPTR	
07403	1006	TAD	NSYMTAB	
07404	3057	DCA	FPTR	
07405	3136	DCA	DISB	
07406	5600	JMP I	SETUP	

IFNZRO MACHINE<
CDEVCOM,DEVCOM
>

0000

IFZERO MACHINE<
CDEVCOM=0
>

07407	0000	ISET,	0	
07410	6050		DILC	
07411	6055		DIXY	


```

27412 4614      JMS I   IIXR
27413 5607      JMP I   ISET
27414 7141      IIXR,   RESET2

```

```

IFZERO MACHINE<
NOPUNCH>

```

```

27415 0000      MEVAL,  0
27416 4566      ISIT
27417 2000      2000
27420 7410      SKP
27421 5500      JMP I   PSXERR
27422 4566      ISIT
27423 3763      3763
27424 5227      JMP     ,+3
27425 4177      JMS     GETND
27426 5216      JMP     MEVAL+1
27427 1215      TAD     MEVAL
27430 5631      JMP I   MEVALGO

27431 1007      MEVALGO,EVALGO

```

/IS IT A C.R.

/,

```

27432 1136      CLEAR,  TAD     DISB
27433 7450      SNA
27434 5400      JMP I   COEVCOM
27435 3013      OCA     INOEX1
27436 7330      CLA CLL CML RAR
27437 3413      OCA I   INOEX1
27440 6201      CDF     0
27441 1013      TAD     INOEX1
27442 3645      OCA I   COINP
27443 6211      CDF     10
27444 5400      JMP I   COEVCOM

```

/IS IT THERE?

/NOPE.

/4000

/RESET INPUT POINTER ALSO.

/B IC.LOE

PAL8-V7

PAL 14-8

07445 7511 COINP, DINP

07446	0220	LLLJMS, 8	
07447	1546	TAD I	LLLJMS
07450	2246	ISZ	LLLJMS
07451	3257	DCA	LLLJMP
07452	4657	JMS I	LLLJMP
07453	7410	SKP	

/IN CASE OF SKIPPING RETURN.

07454	2246	ISZ	LLLJMS
07455	6213	CIF CDF	10
07456	5646	JMP I	LLLJMS

07457	0000	LLLJMP,	0
07460	1657	TAD I	LLLJMP
07461	3257	DCA	LLLJMP
07462	5657	JMP I	LLLJMP

07463	7326	DELAY,	CLA CLL CML RTL	/+2
07464	3220	DCA	NDELAY	/SET UP DEAYL TIME (ONE TIME THROUGH).

		IFNZRO	MACHINE<	
	NULJOB,	TAD	DISB	/SET UP AUTO INDEX REGISTER NOW.

		IFZERO	MACHINE<
		ENPUNCH	
7415		*MEVAL	

07415	7001	NULJOB,	IAC
07416	5215	JMP	NULJOB
			NOPUNCH>

07417	3015	DCA	DISAUTO	/WITH POINTER TO OUR BUFFER.
07420	1220	TAD	NDELAY	/UPOATE DELAY WORD.
07421	7110	CLL RAR		
07422	3220	DCA	NDELAY	
07423	7430	SZL		/ARE WE FINISHED WITH DELAY COMMAND?
07424	5400	JMP I	CDEVCOM	/YEP, EXIT NOW.
07425	1136	TAD	DISB	/GET OUR WORD NOW.
07426	7650	SNA CLA		/ZERO?
07427	5215	JMP	NULJOB	/YEP. WAIT AWHILE.

07430	1415	NULLOP,	TAD I	DISAUTO	
07431	7510		SPA		
07432	5254		JMP	NULCMD	
07433	1256		TAD	07000C	/BRING DOWN INTO RANGE OF SCREEN.
07434	6052		DISD		
07435	5234		JMP	,=1	

07436	6053	DILX	
07437	7200	CLA	
07440	1415	TAD I	DISAUTO
07441	7510	SPA	
07442	5254	JMP	NULCMD
07443	1256	TAD	07000C
07444	6052	DISD	
07445	5244	JMP	.-1
07446	6054	DILY	
07447	7200	CLA	
07450	6052	DISD	
07451	5250	JMP	.-1
07452	6055	DIXY	
07453	5230	JMP	NULLOP
07454	7200	NULCMD, CLA	
07455	5215	JMP	NULJOB
07456	7000	07000C, 7000	
07457	6762	NINTECDF, INTECDF	

/CENTER AGAIN.

07460	4477	UUNDDAD, JMS I	PERROR
07461	1617	TEXT	'NO A=D'
07462	4001		
07463	5504		
07464	0000		

07465	0000	CCINTK, 0	
07466	6131	6131	
07467	5665	JMP I	CCINTK
07470	6213	CIF CDF	10
07471	5672	JMP I	.+1
07472	0175	CLOCKI	

7473	REALTI#.
7473	SETRAT#.

7473	SETCLO=.		
7473	WAITC=.		
7473	WAIT=.		
7473	REJECT=.		
7473	ACCEPT=.		
07473	1450	TAD I	WORD
07474	6213	COF CIF	10
07475	5676	JMP I	.+1
07476	0731	UPCOM00	

7477	TIM=.		
7477	CLC=.		
7477	CLD=.		
7477	ADC=.		
7477	ADB=.		
07477	0000	0	
07500	1436	TAD I	PDL
07501	6213	CIF CDF	10
07502	4704	JMS I	.+2
07503	5677	JMP I	ADB
07504	0747	UPFUN	

/RECALL CORRECT FUNCTION NUMBER (IT'S ON THE STACK)

ENPUNCH
IFZERO MACHINE<

7417 *NULJOB+2>

07417 3762 T8TFX, BEGFIX

07420 0000 NDELAY, 0

07421	0000	TST,	0	
07422	4617		JMS I	TSTFX
07423	6201		COF	0
07424	1631		TAD I	TSTP
07425	6211		COF	10
07426	3016		DCA	AC3
07427	4346		JMS I	PANORM
07430	5621		JMP I	TST
07431	7255	TSTP,	INCHAR	

0001

FIELD 1

0000

*0

10000 2045 TEN, 204510000/0000
 10001 0000
 10002 0000

/INSERTED IN UPPER CORE BECAUSE OF FEEDIBILITY.

10003 0000 CLKSTS, 0
 10004 0000 TIM1, 0
 10005 0000 TIM2, 0
 10006 0000 ABDGET, 0
 10007 0000 ADACPT, 0
 10010 0000 ADCUNT, 0
 10011 0000 CLTEMP, 0
 10012 0000 ADCX, 0
 10013 0100 U100, 100
 10014 0000 CT3, 0
 10015 0000 CT2, 0
 10016 0000 CT1, 0
 10017 0177 U177, 177
 10020 4707 U4707, 4707
 10021 7775 U7775, 7775
 10022 0000 ACOUNT, 0
 10023 0000 APUT1, 0
 10024 0000 APUT2, 0
 10025 0000 ADA1, 0
 10026 0000 ADA2, 0
 10027 0000 ADA3, 0
 10030 0550 UUSETF, USETF
 10031 0673 UMEVAL, UUMEVAL
 10032 0677 UPPFIX, UUPFIX
 10033 0007 U7, 7
 10034 5010 U5010, 5010
 10035 7767 U7767, 7767
 10036 0010 U10, 10
 10037 0654 UAC1, UUAC1
 10040 0661 UAC2, UUAC2
 10041 0666 UAC3, UUAC3
 10042 0020 PPAC1, AC1
 10043 0017 PPAC2, AC2
 10044 0016 PPAC3, AC3
 10045 0025 PPAC4, AC4
 10046 0024 PPAC5, AC5
 10047 0017 U17, 17
 10050 7777 U7777, 7777
 10051 0362 U00A0, 00A0
 10052 7760 U7760, 7760
 10053 0000 UTEMP, 0

```

10054 0722 UJMP, UUJMP
10055 0707 UJMS, UUJMS
10056 0705 UDEVCON, UUDEVCON
10057 6200 UGETWD, 6000
10060 4455 JMS I UJMS
10061 0177 GETWD
10062 5457 JMP I UGETWD
10063 0000 AUTEMP, 0
10064 7767 ADCCOR, -11

```

/ABOUT 512 FOR FUDGE.

0200 PAGE

0175 *, -3

```

10175 6135 CLOCK1, 6135
10176 3003 DCA CLKST8
10177 2005 ISZ TIM2
10200 5203 JMP ,+3
10201 2004 ISZ TIM1
10202 7000 NOP
10203 1006 TAD ABDGET
10204 7750 SPA SNA CLA

```

```

/CLEAR CLOCK FLAG,
/AND SAVE STATUS,
/INCREMENT CLOCK,

```

/IS REAL TIME OPTION RUNNING?

10205	5234	JMP	UIEXT	/NOPE.
10206	1007	TAO	ADACPT	/IT SO, ARE WE NOW ACCEPTING DATA?
10207	7650	SNA CLA		
10210	5234	JMP	UIEXT	/NOPE.
10211	1010	TAO	ADCUNT	/YEP, GET NUMBER OF CHANNELS TO DO.
10212	3011	OCA	CLTEMP	/SET UP OUR COUNTER.
10213	1012	TAO	ADCX	/GET STARTING CHANNEL NUMBER.
10214	6531	6531		/SEND TO TO CONTROLLER.
10215	1013	TAO	U100	/TELL IT TO INCREMENT MULTIPLEXOR WHEN DONE.
10216	6536	6536		
10217	4451	UCLOOP, JMS I	UDDAD	/PERFORM A=0 INSTRUCTION.
10220	4263	JMS	APUT	/STORE IN USERS BUFFER.
10221	2011	ISZ	CLTEMP	/ALL DONE?
10222	5217	JMP	UCLOOP	/NOPE, WAIT.
10223	2014	ISZ	CT3	/DONE, INCREMENT TOTAL NUMBER OF SAMPLES.
10224	5234	JMP	UIEXT	
10225	2015	ISZ	CT2	
10226	5234	JMP	UIEXT	
10227	2016	ISZ	CT1	
10230	5234	JMP	UIEXT	
10231	7240	CLA CMA		/ALL DONE, STOP SAMPLING.
10232	3006	OCA	ABOGET	
10233	3007	OCA	ADACPT	/AND GO INTO "REJECT" MODE.
10234	6031	UIEXT, 6031		/HAS HE TYPED A CONTROL C?
10235	5243	JMP	UIEXT2	/NO.
10236	6034	6034		
10237	0017	AND	U177	
10240	1021	TAO	U7775	/C?
10241	7650	SNA CLA		
10242	5245	JMP	UIEXT3	/YES! BOMB HIM.
10243	6131	UIEXT2, 6131		
10244	5260	JMP	UIEXT4	/CLOCK HAS NOT COME UP AGAIN, ALL IS WELL.
10245	1020	UIEXT3, TAO	U4707	/STOP CLOCK IMMEDIATELY.
10246	6132	6132		
10247	6135	6135		
10250	6130	6130		
10251	7240	CLA CMA		
10252	6130	6130		/CLEAR ALL AFTER PARTIAL ENABLE.
10253	6032	6032		/CLEAT TTY FLAG.
10254	3006	OCA	ABOGET	/FREE BUFFER AND ACCEPT MODE.
10255	3007	OCA	ADACPT	
10256	4454	JMS I	UJMP	
10257	7373	RTERR		
10260	6203	UIEXT4, CIF COP 0		/INTERUPT EXIT.
10261	5662	JMP I ,+1		
10262	6744	INTEXT		/AND DO WHATEVER GOD INTENDED.

10263	0000	APUT,	0		/THIS ROUTINE PUTS A SAMPLE IN THE BUFFER.
10264	3423		DCA I	APUT1	/PLACE IN BUFFER.
10265	2022		ISZ	ACOUNT	/INCREMENT COUNTER.
10266	4325		JMS	ABOP	/BOP UP POINTER.
10267	0023		APUT1		
10270	1023		TAD	APUT1	/GET INPUT POINTER.
10271	7041		CIA		
10272	1024		TAD	APUT2	/DOES IT MATCH OUTPUT POINTER?
10273	7640		SZA CLA		
10274	5663		JMP I	APUT	/NOPE. ALL IS WELL.
10275	3006		DCA	ABOGET	/FREE BUFFER.
10276	3007		DCA	ADACPT	/AND ACCEPT.
10277	4454		JMS I	UJMP	/GIVE ERROR.
10300	7567		UUOATA		/A=0 ERROR.
10301	0000	AGET,	0		/THIS GETS A DATA ITEM FROM BUFFER.
10302	7240		CLA CMA		/DECREMENT COUNTER.
10303	1022		TAD	ACOUNT	
10304	7500		S'Z		/OR SHOULD WE?
10305	5312		JIP	.+5	/YEP. STILL ITEMS LEFT.
10306	7200		CLA		
10307	4455		JMS I	UJMS	/PUT TO SLEEP
10310	6713		BIDLE		
10311	5302		JMP	AGET+1	/AND CHECK AGAIN WHEN AWAKE.
10312	3022		DCA	ACOUNT	/SAVE COUNTER.
10313	1424		TAD I	APUT2	/GET THE SAMPLE.
10314	3323		OCA	ATEMP	/SAVE WHILE UPDATE TAKES PLACE.
10315	6002		IDF		

```

10316 4325 JMS ABOP
10317 2024 APUT2
10322 6001 ION
10321 1323 TAD ATEMP
10322 5701 JMP I AGET

```

/ABOP WILL F--K YOU UP IF CALLED RE-ENTRENTLY.

```

10323 0000 ATEMP, 0
10324 0000 ATEMP2, 0

```

```

10325 0000 ABOP, 0
10326 1725 TAD I ABOP
10327 3324 DCA ATEMP2
10330 1724 TAD I ATEMP2
10331 2325 ISZ ABOP
10332 1025 TAD ADA1
10333 7450 SNA
10334 1026 TAD ADA2
10335 1027 TAD ADA3
10336 3724 DCA I ATEMP2
10337 5725 JMP I ABOP

```

/SAVE POINTER NOW.

/GET VALUE AND SKIP PAST POINTER #1.
/TEST AGAINST UPPER.

/CORRECT TO LOWER.
/AND ADD IN UPPER.
/AND THEN SAVE AWAY.
/AND THEN EXIT.

```

10340 0000 UCL5, 0
10341 1003 TAD CLKSTS
10342 4430 JMS I UUSETF
10343 0000 0
10344 5740 JMP I UCL5

```

/GETS STATUS AFTER LAST CLOCK INTERRUPT.

/RETURN WHEN DONE.

```

10345 0000 UCLC, 0
10346 6137 6137
10347 4430 JMS I UUSETF
10350 0000 0
10351 5745 JMP I UCLC

```

/READS IN AS A CLCA
/GET COUNT REGISTER.
/FIX IT UP.
/AND RETURN NOW.

```

10352 0000 UUULLL, 0
10353 7200 CLA

```

10354	3022	DCA	ACOUNT
10355	3006	OCA	ABOGET
10356	3007	DCA	AOACPT
10357	6001	ION	
10360	6202	CIF	0
10361	5752	JMP I	UUULLL

10362	0000	DOAD,	0	
10363	1052	TAD	U7760	/PLENTY OF DELAY
10364	3375	DCA	DSCREW	/SAVE IN A COUNTER WORD.
10365	6532	6532		/START CONVERSION.
10366	6534	DOADLP,	6534	/WAIT UNTIL DONE.
10367	7410	SKP		/IF NOT DONE, WAIT SOME.
10370	5373	JMP	.+3	/IF DONE, READ IT IN.
10371	2375	ISZ	DSCREW	
10372	5366	JMP	DOADLP	/WAIT UNTIL DONE OR TOO LONG.
10373	6533	6533		/THEN READ IN THE CONVERTED NUMBER.
10374	5762	JMP I	DOAD	/AND RETURN.

10375 0000 DSCREW, 0

12400	4057	USETR,	JMS	UGETWO	/BOP PAST CHAR.
12401	4431		JMS I	UMEVAL	/THIS ROUTINE SETS UP CLOCK TO A GIVEN TIME.
12402	4032		JMS I	UPFIX	/FIX UP AC.
12403	0033		AND	U7	/JUST GET SIGNIFICANT BITS (0-7).
12404	7106		CLL	RTL	/NOW MOVE TO TIME PORTION (3-5)
12405	7006		RTL		
12406	7006		RTL		
12407	1034		TAD	U5010	/SET OTHER CORRECT BITS NOW.
12410	5216		JMP	USETM	
12411	4057	USETC,	JMS	UGETWO	/BOP PAST BAD POINTER.
12412	4431		JMS I	UMEVAL	/THIS ROUTINE LOADS CLOCK WITH USERS COMMAND REGISTER.
12413	4432		JMS I	UPFIX	
12414	0035		AND	U7767	/MAKE SURE TO TURN INTERRUPTS ON.
12415	1036		T.D	U10	
12416	3053	USETM,	DCA	UTEMP	/SAVE ENABLE REGISTER FOR A SECOND.
12417	7240		CLA	CMA	/CLEAR CLOCK NOW.
12420	6130			6130	
12421	7200		CLA		/SO WE CAN LOAD IN CORRECT STUFF.
12422	4431		JMS I	UMEVAL	/EVALUATE HIS TIME SETTING.
12423	4432		JMS I	UPFIX	
12424	7041		CIA		
12425	6002		IOF		/MAKE SURE INTERRUPTS ARE OFF.
12426	6133			6133	
12427	7200		CLA		
12430	3004		DCA	TIM1	/CLEAR OUT THE TIM NOW.
12431	3005		DCA	TIM2	
12432	1053		TAD	UTEMP	/RECALL DESIRED ENABLE REGISTER.
12433	6132			6132	/SEND IT OUT.
12434	6001		ION		/TURN ON INTERRUPTS NOW.
12435	7200		CLA		
12436	5456		JMP I	UDEVCON	/AND EXIT NOW.
12437	7240	UWAIT,	CLA	CMA	/WAITS FOR AN INTERRUPT, SET TO LOOK LIKE CLOCK DID IT.
12440	1005	UWAITC,	TAD	TIM2	/GET LOW ORDER WORD.
12441	3053		DCA	UTEMP	/SAVE FOR AWHILE.
12442	4455		JMS I	UJMS	
12443	6713		BIOLE		/PUT TO SLEEP.
12444	1053		TAD	UTEMP	/WAS IT CLOCK (OR OTHER IF CLOCK FUGEO?)
12445	7041		CIA		
12446	1005		TAD	TIM2	/COMPARE AGAINST PRESENT CLOCK.
12447	7650		SNA	CLA	
12450	5242		JMP	UWAITC+2	/NOT CORRECT. WAIT SOME MORE.
12451	4454	RANOAE,	JMS I	UJMP	

12452 7175

DEVCOM

12453 1026 UACCP, TAD ABOGET
 12454 7740 SZA SMA CLA
 12455 7201 CLA IAC

12456 3007 UREJT, DCA ADACPT
 12457 5251 JMP RANDAE

/IS BUFFER ASSIGNED?

/YEP, WE CAN ACCEPT NOW.

/OR REJECT.

/AND THEN EXIT.

/REAL TIME DECODING FUNCTION.

12460 1007 UREAL, TAD ADACPT
 12461 7650 SNA CLA
 12462 5265 JMP .+3
 12463 4454 JMS I UJMP
 12464 0467 SYIPIT
 12465 4455 JMS I UJMS
 12466 7462 GETARY
 12467 4437 JMS I UAC1
 12470 3023 OCA APUT1
 12471 1023 TAD APUT1
 12472 3024 DCA APUT2
 12473 4440 JMS I UAC2
 12474 7041 CIA
 12475 3023 OCA ADA1
 12476 4440 JMS I UAC2
 12477 7001 IAC
 12500 3027 OCA AOAS
 12501 1027 TAO AOAS
 12502 7041 CIA
 12503 1023 TAO APUT1
 12504 3026 OCA ADA2
 12505 4057 JMS UGETWO
 12506 4431 JMS I UMEVAL
 12507 4432 JMS I UPPFIX
 12510 0047 AND U17
 12511 3012 DCA ADCX
 12512 4431 JMS I UMEVAL
 12513 4432 JMS I UPPFIX
 12514 7440 SZA
 12515 1050 TAO U7777
 12516 0047 AND U17
 12517 7040 CMA
 12520 3010 DCA AOCUNT
 12521 4431 JMS I UMEVAL
 12522 4432 JMS I UPPFIX
 12523 7161 CLL CML CIA
 12524 3014 OCA CT3
 12525 7004 RAL
 12526 4440 JMS I UAC2

/ARE WE ACCEPTING NOW?

/PICK UP BUFFER ITEMS.

/GET WE FIRST WORD OF ARRAY.

/SAVE AWAY NOW.

/ALSO SET UP OUTPUT POINTER.

/GET LAST WORD OF ARRAY.

/SAVE IN UPPER LIMIT TESTER.

/GET AGAIN.

/ADD ONE.

/AND SAVE AWAY IN BOPPER WORD.

/FINALLY GET THE RESET WORD.

/AND SAVE AWAY FOR WRAP AROUND CONDITION.

/BYPASS REAL TIME STATEMENT.

/EVALUATE AN EXPRESSION

/FIX THE AC NOW.

/JUST GET CHANNEL NUMBER.

/SAVE AWAY.

/EVALUATE ANOTHER ITEM.

/FIX IT UP.

/IF ZERO, DO NOT SUBTRACT ONE.

/SUBTRACT ONE TO BRING INTO 0-17 RANGE.

/MAKE INTO 0-17.

/NOW NEGATE AND SUBTRACT ONE.

/AND SAVE AWAY CORRECT ISZ COUNTER.

/NOW GET NUMBER OF SAMPLES (CLOCK TICKS)

/SET UP LOW ORDER WORD OF COUNTER.

/AND PRESERVE CARRY.

10527	7161	CLL CML CIA	
10530	3015	DCA	CT2
10531	7004	RAL	
10532	4437	JMS I	UAC1
10533	7161	CLL CML CIA	
10534	3016	DCA	CT1
10535	3022	DCA	ACDUNT
10536	7201	CLA IAC	
10537	3006	OCA	ABDGET
10540	5456	JMP I	UDEVCON

/CLEAR PRESENT BUFFER COUNTER.

/SET UP BUFFER.

10541	0000	UTIM,	0	/RETURNS CLOCK TICK.
10542	1004	TAD	TIM1	
10543	3346	DCA	.+3	
10544	1005	TAD	TIM2	
10545	4430	JMS I	USETF	
10546	0000	0		
10547	5741	JMF I	UTIM	

10550	0000	USETF,	0	
10551	3053	DCA	UTEMP	/SAVE LOW ORDER WORD OF FAC.
10552	4455	JMS I	UJMS	
10553	3762	BEGFIX		/PREPARE TO INTERGIZE IT.
10554	1750	TAD I	USETF	/GET MIDDLE WORD.
10555	6201	ODF	0	
10556	3443	DCA I	PPAC2	/PLACE IN FAC.
10557	1053	TAD	UTEMP	/GET LOW WORD.
10560	3444	DCA I	PPAC3	/PLACE IN FAC.
10561	6211	ODF	10	
10562	4455	JMS I	UJMS	
10563	4600	ANORM		
10564	2350	ISZ	USETF	/BYPASS VALUE
10565	5750	JMP I	USETF	/RETURN NOW.

10600	0000	UACB,	0	/THIS RETURNS A VALUE FROM THE A-D.
10601	7710	SPA	CLA	/BUFFERED OR DIRECT?
10602	5222	JMP	UACN	/DIRECT.
10603	1006	TAD	ABDGET	/CHECK TO SEE WHETHER BUFFER ASSIGNED.
10604	7450	SNA		
10605	5220	JMP	UABAD	/NO BUFFER ASSIGNED.
10606	7710	SPA	CLA	/IS BUFFER ACTIVE?
10607	5215	JMP	UADCMY	/NO, GET COUNT.
10610	1007	TAD	ADACPT	/ACTIVE, ARE WE ACCEPTING DATA?

10611	7650		SNA CLA			
10612	5215		JMP	UADCMY		/NO. CHECK COUNT IN BUFFER.
10613	4653	UADCIN,	JMS I	UPAGET		/GET VALUE FROM A-D BUFFER.
10614	5231		JMP	UINAC		/AND FIX IT UP.
10615	1022	UADCMY,	TAD	ACOUNT		/GET BUFFER COUNTER NOW.
10616	7640		SZA CLA			/#0?
10617	5213		JMP	UADCIN		/NOPE. WE CAN RETURN SOME DATA.
10620	4454	UABAD,	JMS I	UJMP		
10621	7460		UUNOAD			/NO A-D DATA IN BUFFER. HE'S F--KED.
10622	4432	UADCN,	JMS I	UPFIX		/NON-REAL TIME.
10623	0047		AND	U17		/JUST GET CHANNEL NUMBER.
10624	6002		IOF			/WE CANNOT BE INTERRUPTED HERE.
10625	6531		6531			
10626	6536		6536			
10627	4451		JMS I	UO0AD		/PERFORM THE CONVERSION NOW.
10630	6001		ION			/RESTORE INTERRUPTS.
10631	3063	UINAC,	DLA	AUTEMP		/SAVE FOR A SECOND.
10632	1063		TAD	AUTEMP		/PLACE ABSOLUTE VALUE IN FAC.
10633	7510		SPA			
10634	7041		CIA			
10635	4430		JMS I	UUSETF		
10636	0000		0			
10637	1063		TAD	AUTEMP		/NOW SET SIGN OF FAC.
10640	6201		COF	0		/SET TO PICK UP FIELD 0, NO COLDNESS LEFT, DESPITE COMMENTS.
10641	7710		SPA CLA			/IF POSITIVE LEAVE ALONE.
10642	7330		CLA CLL	CML RAR		/SET LEFT MOST BIT ON TO INDICATE NEGATIVE.
10643	3446		DCA I	PPAC0		
10644	1445		TAD I	PPACE		/GET EXPONENT NOW.
10645	1064		TAD	A0CC0R		/BRING INTO CORRECT RANGE NOW.
10646	7500		SMA			/IF TOO FAR,
10647	3445		DCA I	PPACE		/DDN'T CORRECT.
10650	7200		CLA			
10651	6211		COF	10		/RESET COF.
10652	5600		JMP I	UADCB		/RETURN TO FIELD ONE (C0DL ,UGH1)
10653	0301	UPAGET,	AGET			
10654	0000	UUAC1,	0			
10655	6201		COF	0		
10656	1442		TAD I	PPAC1		
10657	6211		COF	10		
10660	5654		JMP I	UUAC1		
10661	0000	UUAC2,	0			
10662	6201		COF	0		

10663	1443	TAD I	PPAC2
10664	6211	CDF	10
10665	5661	JMP I	UUAC2

10666	0000	UUAC3, 0	
10667	6201	CDF	0
10670	1444	TAD I	PPAC3
10671	6211	CDF	10
10672	5666	JMP I	UUAC3

10673	0000	UUMEVAL, 0	
10674	4455	JMS I	UJMS
10675	7415	MEVAL	
10676	5673	JMP I	UUMEVAL

10677	0000	UUPFIX, 0	
10700	4455	JMS I	UJMS
10701	4744	FIX	
10702	7200	CLA	
10703	4441	JMS I	UAC3
10704	5677	JMP I	UUPFIX

10705	4454	UUDEVG, JMS I	UJMP
10706	7176	DEVCON	

10707	0000	UUJMS, 0	
10710	6202	CIF	0
10711	1707	TAD I	UUJMS
10712	3314	DCA	,+2
10713	4721	JMS I	UUUJMS
10714	0000	0	
10715	7410	SKP	
10716	2307	ISZ	UUJMS
10717	2307	ISZ	UUJMS
10720	5707	JMP I	UUJMS

/IN CASE OF SKIPPING RETURN

10721	7446	UUUJMS, LLLJMS	
-------	------	----------------	--

10722	0000	UUJMP,	0	
10723	6202		CIF	0
10724	1722		TAD I	UUJMP
10725	3327		DCA	.+2
10726	4730		JM8 I	UUUJMP
10727	0000		0	

10730	7457	UUUJMP,	LLLJMP	
-------	------	---------	--------	--

10731	1335	UPCOMDD, TAD	UUFUDGE	
10732	1336		TAD	UPJMP
10733	3334		DCA	.+1
10734	7402		HLT	
10735	1740	UUFUDGE, -6040		
10736	5737	UPJMP, JMP I		.+1
10737	0460		UREAL	
10740	0400		USETR	
10741	0411		USETC	
10742	0440		UWAITC	
10743	0437		UWAIT	
10744	0000		0000	
10745	0453		UACCPT	
10746	0456		UREJT	

/NOT USED NOW.

10747	0000	UPFUN,	0	
10750	1356		TAD	UFFUD
10751	1357		TAD	UFJMP
10752	3353		DCA	.+1
10753	7402		HLT	
10754	6202		CIF	0
10755	5747		JMP I	UPFUN

10756	7757	UFFUD,	-21	
10757	4760	UFJMP,	JM8 I	.+1
10760	0770		ZZADC	
10761	0000		0000	
10762	0541		UTIM	

2763	2200	0000
2764	2200	0000
2765	2340	UCL8
2766	2345	UCLC
2767	2775	ZZADB

2772	0000	ZZADC,	0
2771	7240	CLA	CMA
2772	4774	JMS I	.+2
2773	5770	JMP I	ZZADC
2774	2600	UADCB	

2775	0000	ZZADB,	0
2776	4774	JMS I	ZZADB=1
2777	5775	JMP I	ZZADB

```
IFZERO MACHINE<
0003    LIMIT=TEN+3
        >
IFNZRO MACHINE<
LIMIT, 0
        >
```

7022 *7022

```
17022 0000 PERMSYM,0
17023 4200 XXPLUS, 4200;TEXT '+'
17024 5300
17025 4201 XXMINUS,4201;TEXT '-'
17026 5500
17027 4302 XXSTAR, 4302;TEXT '*'
17030 5200
17031 4303 XXSLASH,4303;TEXT '/'
17032 5700
17033 4404 XXUPARR,4404;TEXT '^'
17034 3600
17035 4110 XXLE, 4110;TEXT '<'
17036 7475
17037 0000
17040 4111 XXGE, 4111;TEXT '>'
17041 7675
17042 0000
17043 4112 XXNE, 4112;TEXT '<>'
17044 7476
17045 0000
17046 4111 XXEG, 4111;TEXT '>'
```

17047	7576	
17050	0000	
17051	4110	XXEL, 4110;TEXT 'E'
17052	7574	
17053	0000	
17054	4105	XXEQ, 4105;TEXT 'E'
17055	7500	
17056	4106	XXLT, 4106;TEXT 'L'
17057	7400	
17060	4107	XXGT, 4107;TEXT 'G'
17061	7600	
17062	4015	XXCOMMA,4015;TEXT ','
17063	5400	
17064	4016	XXSEMI, 4016;TEXT ';'
17065	7300	
17066	4017	XXCLOSE,4017;TEXT ')'
17067	5100	
17070	4017	XXRBRAK,4017;TEXT ']'
17071	3500	
17072	4021	XXTO, 4021;TEXT ' TO '
17073	4024	
17074	1740	
17075	0000	
17076	4022	XXSTEP, 4022;TEXT ' STEP '
17077	4023	
17100	2405	
17101	2040	
17102	0000	
17103	4023	XXOPEN, 4023;TEXT '('
17104	5000	
17105	4023	XXLBRAK,4023;TEXT '['
17106	3300	
17107	4024	XXFN, 4024;TEXT 'FN'
17110	0616	
17111	0000	
17112	4025	XXCOS, 4025;TEXT 'COS'
17113	0317	
17114	2300	
17115	4026	XXTAN, 4026;TEXT 'TAN'
17116	2401	
17117	1600	
17120	4027	XXATN, 4027;TEXT 'ATN'
17121	0124	
17122	1600	
17123	4030	XXLOG, 4030;TEXT 'LOG'
17124	1417	
17125	0700	
17126	4031	XXEXP, 4031;TEXT 'EXP'
17127	0530	
17130	2000	
17131	4032	XXSQN, 4032;TEXT 'SQN'
17132	2321	
17133	2200	
17134	4033	XXABS, 4033;TEXT 'ABS'
17135	0102	

17136	2300		
17137	4034	XXSGN,	4034;TEXT 'SGN'
17140	2307		
17141	1620		
17142	4035	XXINT,	4035;TEXT 'INT'
17143	1116		
17144	2400		
17145	4036	XXRND,	4036;TEXT 'RND'
17146	2216		
17147	0400		
17150	4037	XXSIN,	4037;TEXT 'SIN'
17151	2311		
17152	1600		
17153	4040	XXPUT,	4040;TEXT 'PUT'
17154	2025		
17155	2400		
17156	4041	XXLIST,	4041;TEXT 'LIST'
17157	1411		
17160	2324		
17161	0000		
17162	4041	XXLIS,	4041;TEXT 'LIS'
17163	1411		
17164	2300		
17165	4042	XXRUN,	4042;TEXT 'RUN'
17166	2225		
17167	1600		
17170	4043	XXSCR,	4043;TEXT 'SCR'
17171	2303		
17172	2200		
17173	4044	XXGET,	4044;TEXT 'GET'
17174	0705		
17175	2400		
17176	4045	XXADC,	4045;TEXT 'ADC'
17177	0104		
17200	0300		
17201	4046	XXTTY,	4046;TEXT 'TST'
17202	2423		
17203	2400		
17204	4047	XXTIME,	4047;TEXT 'TIM'
17205	2411		
17206	1500		
17207	4050	XXTAB,	4050;TEXT 'TAB'
17210	2401		
17211	0200		
17212	4051	XXUUF,	4051;TEXT 'UUF'
17213	2525		
17214	0600		
17215	4052	XXCLS,	4052;TEXT 'CLS'
17216	0314		
17217	2300		
17220	4053	XXCLC,	4053;TEXT 'CLC'
17221	0314		
17222	0300		
17223	4054	XXADB,	4054;TEXT 'ADB'
17224	0104		

```
17225 0200
17226 6000 XXCRLF, 6000;TEXT '␣'
17227 3700
17230 6000 XXBSL3H,6000;TEXT '\ '
17231 3400
17232 6001 XXEND, 6001;TEXT 'END'
17233 0516
17234 0400
17235 6002 XXFOR, 6002;TEXT 'FOR '
17236 0617
17237 2240
17240 0000
17241 6003 XXGOSUB,6003;TEXT 'GOSUB '
17242 0717
17243 2325
17244 0240
17245 0000
17246 6004 XXGOTO, 6004;TEXT 'GO TO '
17247 0717
17250 4024
17251 1740
17252 0000
17253 6004 XXTHEN, 6004;TEXT ' THEN '
17254 4024
17255 1005
17256 1640
17257 0000
17260 6005 XXIF, 6005;TEXT 'IF '
17261 1106
17262 4000
17263 6006 XXINPUT,6006;TEXT 'INPUT '
17264 1116
17265 2025
17266 2440
17267 0000
17270 6007 XXLET, 6007;TEXT 'LET '
17271 1405
17272 2440
17273 0000
17274 6010 XXNEXT, 6010;TEXT 'NEXT '
17275 1605
17276 3024
17277 4000
17300 6011 XXPRINT,6011;TEXT 'PRINT '
17301 2022
17302 1116
17303 2440
17304 0000
17305 6012 XXRETRN,6012;TEXT 'RETURN'
17306 2205
17307 2425
17310 2216
17311 0000
17312 6013 XXSTOP, 6013;TEXT 'STOP'
17313 2324
```


17314	1720	
17315	2020	
17316	6214	XXDIM, 6014/TEXT 'DIM '
17317	2411	
17322	1540	
17321	2000	
17322	6215	XXRSTOR, 6015/TEXT 'RESTORE'
17323	2205	
17324	2324	
17325	1722	
17326	2500	
17327	6016	XXREM, 6016/TEXT 'REM '
17330	2205	
17331	1540	
17332	2000	
17333	6017	XXDEF, 6017/TEXT 'DEF '
17334	0405	
17335	0640	
17336	2000	
17337	6020	XXREAD, 6020/TEXT 'READ '
17340	2205	
17341	0104	
17342	4000	
17343	6021	XXDATA, 6021/TEXT 'DATA '
17344	0401	
17345	2401	
17346	4000	
17347	6024	XXTTYI, 6024/TEXT 'TTY IN'
17350	2424	
17351	3140	
17352	1116	
17353	2000	
17354	6025	XXTTYO, 6025/TEXT 'TTY OUT'
17355	2424	
17356	3140	
17357	1725	
17360	2400	
17361	6026	XXLPT, 6026/TEXT 'LPT'
17362	1420	
17363	2400	
17364	6027	XXPTP, 6027/TEXT 'PTP'
17365	2024	
17366	2000	
17367	6030	XXPTR, 6030/TEXT 'PTR'
17370	2024	
17371	2200	
17372	6032	XXRUB, 6032/TEXT 'RUBOUTS'
17373	2225	
17374	8217	
17375	2524	
17376	2300	
17377	6033	XXNRUB, 6033/TEXT 'NO RUBOUTS'
17400	1617	

/6031 HAS BEEN REMOVED.

17401	4022	
17402	2502	
17403	1725	
17404	2423	
17405	0000	
17406	6034	XXCLEAR,6034;TEXT 'CLEAR'
17407	0314	
17410	0501	
17411	2200	
17412	6035	XXDELAY,6035;TEXT 'DELAY'
17413	0405	
17414	1401	
17415	3100	
17416	6036	XXUSE, 6036;TEXT 'USE '
17417	2523	
17420	0540	
17421	0000	
17422	6037	XXPLOT, 6037;TEXT 'PLOT '
17423	2014	
17424	1724	
17425	4000	
17426	6040	XXREAL, 6040;TEXT 'REAL TIME '
17427	2205	
17430	0114	
17431	4024	
17432	1115	
17433	0540	
17434	0000	
17435	6041	XXSETR, 6041;TEXT 'SET RATE '
17436	2305	
17437	2440	
17440	2201	
17441	2405	
17442	4000	
17443	6042	XXSETC, 6042;TEXT 'SET CLOCK '
17444	2305	
17445	2440	
17446	0314	
17447	1703	
17450	1340	
17451	0000	
17452	6043	XXWAITC,6043;TEXT 'WAITC'
17453	2701	
17454	1124	
17455	0300	
17456	6044	YYWAIT, 6044;TEXT 'WAIT'
17457	2701	
17460	1124	
17461	0000	
17462	6045	XXUCOM, 6045;TEXT 'UCOM '
17463	2503	
17464	1715	
17465	4000	
17466	6046	XXACPT, 6046;TEXT 'ACCEPT'
17467	0103	

17470 0305
17471 2024
17472 0700
17473 6247 XXREJT, 6047;TEXT 'REJECT'
17474 2205
17475 1205
17476 0324
17477 0000

17500 0000 0

17501 3000 XXTEXT, 3000
17502 6023 XXEOF, 6023
17503 4113 XXUNARY, 4113
17504 4014 XXFINI, 4014
17505 6022 XXEXIT, 6022
17506 2000 XXLIT0, 2000;2001;2002;2003
17507 2001
17510 2002
17511 2003

NOPUNCH

17512 0000 LINBUF, ZBLOCK 51
17563 0000 LBEGIN, ZBLOCK 60
17643 0000 ENDLIN, 0
17644 0000 POLIST, ZBLOCK 40
17704 0000 ENDPDL, 0
17705 0000 FORLIST, ZBLOCK 20
17725 0000 GOLIST, ZBLOCK 30
17755 0000 GSBEND, 0

ENPUNCH

\$

ABCECF 1756	BEGFIX 3762	DBIBRT 7547	EXPOK 5265
ABOGET 0006	BIDLE 6713	OBLIT 7526	FAO 4000
ABOP 0325	BKWD 0600	OBPUT 7556	FAOEXT 1314
ABS 6425	BREAK 6522	ODLAST 7512	FADI 4400
ACCEPT 7473	BSKIP 2730	OCEXP 0043	FATNAX 6273
ACE 2025	BUBY 6737	OECFRA 3366	FATNC 6337
ACN 4417	CARRET 2700	OEEPER 0526	FATNCH 6342
ACCOUNT 0022	CCINTK 7465	DEF 1576	FATNCJ 6345
ACS 0024	CCXRA 7342	OELAY 7463	FATNC1 6304
AC1 0020	COEVCO 0000	DELETE 6501	FATNC2 6307
AC2 2017	CDINP 7445	DELDUT 0142	FATNC3 6312
AC3 0016	CHECKW 2346	DEVCOM 7175	FATNC4 6315
AOACPT 0007	CHKFIT 6400	OEVCN 7176	FATNC5 6320
AOA1 0025	CLAB 6133	OICO 6051	FATNC6 6323
AOA2 2026	CLBA 6136	OIGIN 3224	FATNC7 6326
AOA3 0027	CLC 7477	OIGIT 3204	FATNC8 6331
ADB 7477	CLCA 6137	OIGLUP 6557	FATNC9 6334
ADC 7477	CLEAR 7432	OILC 6050	FATNSX 6272
AOCOR 0064	CLEARV 2462	OILE 6056	FATNT 6276
AOCL 6530	CLEN 6134	OILX 6053	FATNTT 6301
AOCUNT 0010	CLKST 0003	OILY 6054	FCNTLC 6665
AOCX 0012	CLOCK 0175	DIM 6472	FCNTLO 6703
AORES 0067	CLOE 6132	DIMFLA 0034	FOIGIT 3360
AOLE 6536	CLRCNT 0360	OINP 7511	FDV 7000
AOLM 6531	CLS 7477	DIRE 6057	FDVI 7400
AOR0 6533	CLSA 6135	DISAUT 0015	FENTER 4435
AORS 6537	CLSK 6131	OIS0 0136	FEXIT 0000
ADSE 6535	CLTEMP 0011	DIS0 6052	FEXPC1 6072
AOSK 6534	CLZE 6130	OIVLP 4705	FEXPC2 6075
AOST 6532	CNCLR 0143	DIVXTE 3364	FEXPC3 6100
AGET 0301	CNTLCF 6700	OIXY 6055	FEXPC4 6103
ALGNLP 4466	CNTLCR 6670	DLAST 7511	FEXPC5 6106
ALLCC 1461	CNTLO 0133	DOAO 0362	FEXPC6 6111
ALL3 3146	COELO 0004	DOAOLP 0366	FEXPF 6067
ALTHOO 2663	COLUMN 0126	DOITNO 1247	FEXPI 6061
ALI 4654	COMMON 3400	DOTZER 7371	FEXPU 6064
AMATCH 6506	COMPAR 2136	OPFLAG 3365	FINDIT 0557
ANORM 4600	CONST 1367	OQINTX 3170	FINOLU 0565
APUT 0263	COS 5616	DBCREW 0375	FIX 4744
APUT1 0023	COWT 7326	DVLOOP 5245	FIXEXI 4773
APUT2 0024	COWTFP 7343	EOIT 2405	FIXITU 5200
ARGERR 7363	COWTLP 7331	END 2567	FIXLIN 2113
ARRLOC 0003	COWTO 7340	ENOLIN 7643	FIXLUP 4750
ARI 4402	COWTW 7344	ENONUM 3331	FIXUP 5146
ATEMP 0323	CRINTX 3076	ENDPOL 7704	FJMP 1000
ATEMP2 0324	CRLF 6531	EOFAO 4526	FJMPI 1400
ATLINE 6451	CRLFPR 3740	EPTR 0056	FJUMP 1130
ATN 6200	CT1 0016	ERROR 4142	FLD 3000
ATNBIG 6265	CT2 0015	EVAL 1004	FLOI 3400
ATNLOW 6220	CT3 0014	EVALGO 1007	FLOGC1 6172
ATNNOT 6237	CVTL00 5024	EXECUT 0213	FLOGC2 6153
AUTEMP 0063	DATAER 1667	EXIT 2402	FLDGC3 6156
BARROW 2666	OBAO 7513	EXP 6000	FLDGC4 6161
BCDEF6 1757	OBBAO 7532	EXP000 5242	FMP 6000
BCKW08 4502	DBGOT 7420	EXPLON 5764	FMPI 6400

FMTENF 5123	FSINZZ 5710	IOLEAC 6732	JDIGIT 3124
FMT1 5125	FSIN10 5641	IOLECO 6725	JISDIG 3367
FMT2 5053	FSLE 0150	IOLECI 6726	JMATCH 2766
FMT3 5130	FSLT 0110	IOLELK 6731	JPUTCH 0777
FN 5453	FSNE 0040	IOLEPC 6733	JTXXIT 3123
FNERR 0352	FSQRX 5407	IF 0375	JUST0 3150
FNEXIT 1200	FST 2000	IGNORE 2115	JUST0F 3160
FOR 0413	FSTI 2400	IIXR 7414	JUST0P 3163
FORCT 0063	FTANT1 5677	IMMED 2454	JUST1 3145
FORDON 0663	FTANT2 5702	IN 3431	JUST2 3147
FORERR 0501	FUNTAB 1131	INCHAR 7255	KEYWD 0231
FORLIM 0721	FUPRC1 5762	INDEX 0127	LBEGIN 7563
FORLIS 7705	FWD 0200	INDEX1 0013	LCF 6662
FORSTE 0724	FXXPFX 6023	INDEX2 0014	LET 0312
FORVAR 0452	GALT 7247	INLCTH 4065	LETDD 0205
FOUND 0575	GDIM2 1564	INLDOP 0572	LETTER 3446
FOURLF 3557	GET 0001	INLUPF 0432	LFXLUP 2333
FPADD 4456	GETADD 1400	INODUN 6710	LHALF 3070
FPADDR 4304	GETARY 7462	INOPPP 6641	LIMIT 0003
FPOIV 4667	GETBLK 1674	INOYTT 6645	LINBUF 7512
FPDOIT 4237	GETCH 7201	INPLUP 4034	LINENO 0052
FPFLAG 0156	GETJ 1770	INPPTR 4003	LINFIX 2330
FPGOTD 4273	GETLIN 2603	INPUT 4007	LIST 3600
FPJMP 4317	GETLRE 2600	INSERT 2032	LISTAL 3616
FPJUMP 4274	GETOPR 1015	INSRTS 2030	LISTLU 3620
FPLAC 4351	GETVAR 0311	INT 6434	LISTSD 3617
FPLODP 4202	GETWD 0177	INTAC 6734	LIST2 3640
FPHUL 4530	GLOOP 2711	INTCDF 6770	LIST3 3655
FPNOAO 4270	GDBDTH 0532	INTCIF 6771	LIST4 3661
FPPER 4305	GOLIST 7725	INTECO 6762	LIST5 3676
FPPGZ 4227	GOSUB 0505	INTEMP 6736	LITRAL 3131
FPSKIP 4314	GDTEMP 0053	INTER 6600	LLLJMP 7457
FPSTO 4322	GOTO 0517	INTEXT 6744	LLLJMS 7446
FPSUB 4453	GDYOPR 1202	INTL 6735	LLLUUU 7140
FPT 4200	GDTSS 1074	INTOU 6765	LLS 6666
FPTMP 4576	GOTSTE 0634	INWDTH 4064	LNOEND 3630
FPTX 0057	GOUT 7251	IPNDPE 4024	LOADED 4127
FPZDIV 4736	GPTR 0060	IPOINT 7034	LOCCTR 0045
FRNDX 5404	GRB 7224	ISDEF2 3512	LOCTEM 0671
FRSTNE 2155	GRDELA 7222	ISDIG 6532	LOCTMP 1673
FSS 5000	GSEBND 7755	ISDIM 1473	LOG 6114
FSDI 5400	GSSBPT 0165	ISET 7407	LOGACE 6165
FSEQ 0050	GSS1 1562	ISIT 4566	LOGFWD 6164
FSGE 0100	GSS2 1563	ISITDF 0550	LOGOKW 6167
FSGT 0140	GTBKL 1710	ISITFU 1110	LOWLOC 2171
FSHIFT 7443	GTEMP 7254	ISITLI 4104	LPTOUT 7163
FSINC1 5713	GWHERE 7270	ISLIT 4133	LSF 6661
FSINC3 5716	HFOUND 7321	ISSOME 1644	LSTLOC 2160
FSINC4 5721	HIGHWD 4333	ISUMIN 1013	LUP 3405
FSINC5 5724	HLOOP 2722	ITSDEF 3514	LUPF 0426
FSINC6 5727	HPTR 0061	ITSDP 3256	L4LUP 3664
FSINC7 5732	HRCHAR 7256	ITSE 3263	MACHIN 0000
FSINM4 5735	HRLOP 7302	ITSDP 1220	MAYZER 4612
FSINOK 5657	HRMES 7323	ITSP 3300	MENDLI 0041
FSINZ 5705	IAMLES 2156	JBPENT 3707	MENDPD 2363

MEVAL 7415	NULCMD 7454	0143 7266	07612 7262
MEVALG 7431	NULJOB 7415	017 5147	07640A 0765
MGOLIS 0720	NULLOP 7430	01742 3375	07640B 2763
MGSSEN 0525	NUMBUF 5335	0175 7267	07640C 7263
MINUS 1316	OADO 4435	0177 0027	07673 3316
MLBEGI 0173	OBHIGH 1177	01774 3376	077 0070
MLENO 0174	OBLOW 1165	02 0062	07706A 6544
MLINBU 0040	OBOP 7101	0200 0155	07706C 3473
MNSONE 0736	OCC 5205	02040A 3373	07715 2775
MOREDI 6470	OCMLIM 7115	02062 5344	07725A 3100
MOREIN 4000	OCOR 7113	0212 0010	07725B 3371
MORERO 1621	OCOUNT 7042	0215 0007	07737 3122
MOVE 2012	ODEV 0132	023 1366	07740 0054
MOVLUP 2072	OFLAG 7100	0233 3772	07741 3745
MPY 5321	OFLOW 7115	0240 0051	07743 4743
MPYLUP 4552	OJUMP 1276	0253 5150	07745 0162
MTXXIT 3201	OLOOP 0066	0255 5151	07746 7264
MULCLR 4571	ONE 0151	0256A 5156	07753 3104
MULEXP 3346	ONEDIM 1064	0256B 6575	07762 2327
MULXTE 3363	ONESS 1076	0260 0011	07763A 0774
MUSTBE 4570	ONLY1 3322	027 3370	07763B 3101
NDELAY 7420	00760C 5452	0305 5152	07764A 1274
NEWCHA 2615	007736 2326	032 3121	07764B 3102
NEWLIN 2610	OPOONE 1203	036 2767	07764C 3374
NEXT 0600	OPE 0030	03737B 2773	07764D 6777
NEXTER 0673	OPERAN 0073	03754 1162	07766 5154
NEXTVA 0637	OPNUL 7067	03755 1273	07770 0055
NINTEC 7457	OPOINT 7065	0377 0071	07771 5155
NOBUMP 4633	OPOTAB 7073	04 0160	07772 5157
NOCOMM 0335	OPRST 7155	040 2770	07773 5346
NOINT 0134	OPS 0026	04001 7525	07774 1566
NONBLN 3110	OPUTC 7041	04014 1163	07775 6776
NONZER 5016	OP1 0023	042 3106	07776 3372
NOPARE 1035	OP2 0022	04200 3105	07777 7114
NOPCR 2216	OP3 0021	04213 1164	PACN 4742
NORLFT 6423	OTEMP 1271	05400 5347	PAL1 0150
NORMEO 5220	OTHER 3000	06201A 6615	PANORM 0146
NORMIT 5207	OTST1 7112	06201B 7005	PARGER 0047
NORUBO 5574	OUTOEL 7146	06202 6775	PAR1 0147
NOSS1 1460	OUTDEV 0131	07 0072	PASSCR 0472
NOSS2 1453	OUTO2 0130	070 6774	PASSUM 7440
NOT 3427	OUTIT 7043	0700 1272	PBEGFI 1776
NOTBAD 2127	OUTNUM 5000	07000A 2560	PBIDLE 7161
NOTBIG 4620	OV 0012	07000B 3474	PBOMB 0367
NOTCR 3023	01000 3550	07000C 7456	PBUSY 7157
NOTPRS 2061	011 0504	07077 1275	PCCUNT 0744
NOTHER 0435	0110 2361	07520 5153	PCHKFI 0163
NOTKWD 0313	012 0065	07545 4777	PCOMMO 3357
NOTNOW 2000	0122 2771	07570 6456	PCOWT 0141
NOTSGN 3301	013 1567	07577 4577	PDEVCO 7442
NOTTXT 2236	0132 7265	07577B 7554	POL 0036
NOTVAR 1105	0137 7261	07600 4345	POLIST 7644
NOTX10 5236	014 2360	07601 7260	PEOIT 0120
NPSPER 7555	0140A 0775	07603 2774	PERMSY 7022
NSYMTA 0006	0140B 2772	07610 5345	PERROR 0077

PEVAL 0101	PPASSC 0110	PUTLOC 2172	SLOOP 2707
PEVALG 2240	PPDLIS 0125	PUTLP 7007	SLSHMT 1337
PEXECU 0103	PPERMS 2565	PUTXRA 0776	SNUMFL 0064
PEXP 5776	PPFLOO 4741	PXFORL 0556	SPACER 0370
PFINDI 0672	PPFORL 1760	PXLINB 3746	SPECIN 0140
PFIX 0106	PPINT 6060	PXXCRL 3125	SPLEFT 0144
PFNERR 5546	PPOP 0105	PXXEOF 2564	SQEXIT 5450
PFPL00 4575	PPRINR 2241	PXXEXI 3126	SQLOOP 5435
PGETAD 0102	PPRINT 0114	PXXLIT 3130	SQR 5412
PGETBL 0115	PPRINU 0123	PXXTHE 2562	SSERR 1570
PGETCH 0032	PPUSH 0104	PZEROO 6545	SSFIX 4775
PGETLI 0124	PPUTCH 0033	QBIDLE 7257	SSONE 0344
PGETLR 3022	PPXRA 7160	QERROR 4170	SSTWO 0345
PGETOP 0111	PRENT 2316	QHRCHA 7156	STAR 1327
PGETVA 0113	PRESET 0137	RANOAE 0451	START 1000
PGOLIS 0164	PRINBL 2277	RBSWCH 0135	STICKI 6430
PGOTOP 0107	PRINCO 2303	READ 1623	STOP 2570
PHRCHA 6740	PRINHA 2260	READLO 0046	STOVAR 0341
PIGNOR 0471	PRINQU 2225	READY 6525	SUBRA 2161
PINCHA 6741	PRINRE 2242	REALTI 7473	SXERR 6441
PINT 5676	PRINSE 2312	REJECT 7473	TAB 5547
PISITL 0175	PRINT 2173	RELATE 1342	TABDES 6367
PJSET 2461	PRINTC 2207	REMPAC 3043	TABOO 6350
PLBEGI 0172	PRINTG 2206	RESET1 7116	TABFLG 2345
PLETOO 0204	PRINTH 2222	RESET2 7141	TABOK 6360
PLETTE 3103	PRINTX 3702	RESTOR 3773	TABTHR 2362
PLIMIT 2561	PRINUM 3747	RETNER 0713	TAN 5600
PLINBU 0037	PRINVA 3653	RETURN 0677	TBEGFI 5572
PLINFI 0161	PRLOOP 3711	RHALF 3074	TEN 0000
PLIST 2563	PRSUBR 3724	RMLEFT 6413	THESKI 1353
PLITRA 3377	PRTEMP 0042	RND 5353	THISTX 3107
PLOG 5775	PRTXRE 3722	RNOJMP 5350	TIM 7477
PLOT 7400	PSGN 5675	RTERR 7373	TIM1 0004
PLOTB 7514	PSKIPI 1617	RUBO 5573	TIM2 0005
PLUS 1312	PSLOOP 0116	RUN 2452	TMP 0031
PMEVAL 7441	PSPACE 1565	RUNIN 2503	TOOLON 5162
PMPY 5160	PSTICK 0121	RUNLUP 2465	TPRINT 6370
PNBF6 5161	PSTOVA 0112	RUNNOT 2477	TRALUP 2105
PNOCR 0757	PSXERR 0100	RUN2IN 2543	TRANSF 2103
PNONBL 0122	PSYMTA 0005	RUN2LU 2514	TRYAGI 5133
PNOTNO 2566	PTABDE 5570	RUN2NO 2537	TRYSTE 0626
PNUMBU 0044	PTABFL 5571	SCHMOR 1657	TST 7421
POADD 0157	PTABLE 2777	SCRATC 2440	TSTFX 7417
POFLAG 6742	PTEN 0145	SEARCH 1660	TSTP 7431
POP 3551	PTEXT 0076	SETCLO 7473	TTYIN 7173
POPERA 3127	PTPOUT 7164	SETRAT 7473	TTYOUT 7165
POP3 4434	PTRIN 7172	SETSGN 4512	TUBIG 2657
POTHER 2776	PTUBIG 3021	SETUP 7400	TWIOTH 2357
POUIT 6743	PUSERF 5545	SGN 0726	TWOSS 1077
POUTNU 0117	PUSH 2364	SIMPLV 3466	TXTPAK 3046
PPACE 0045	PUTCDF 7037	SIN 5624	UABAO 0620
PPAC8 0046	PUTCH 0741	SINCHA 7162	UACCP 0453
PPAC1 0042	PUTCIN 7023	SJUMP 0240	UAC1 0037
PPAC2 0043	PUTER 7000	SKIPIT 0467	UAC2 0040
PPAC3 0044	PUTJ 1761	SLASH 1332	UAC3 0041

UAOCB	2622	UUUJMP	0730	XXEQ	7054	XXTAB	7207
UADCIN	2613	UUUJMS	0721	XXEXIT	7505	XXTAN	7115
UADCMY	2615	UUULLL	0352	XXEXP	7126	XXTEXT	7501
UADCN	2522	UVP	7502	XXFINI	7504	XXTHEN	7253
UCLC	2345	UWAIT	0437	XXFN	7107	XXTIME	7204
UCLQOP	2217	UWAITC	0440	XXFOR	7235	XXTO	7072
UCLS	2348	UIP	7503	XXGE	7040	XXTTY	7201
UDEVCO	0256	UI0	0036	XXGET	7173	XXTTYI	7347
UDDAD	0351	UI00	0013	XXGOSU	7241	XXTYO	7354
UDDPER	1363	UI7	0047	XXGOTO	7246	XXUCOM	7462
UFFUD	0756	UI77	0017	XXGT	7060	XXUNAR	7503
UFJMP	0757	U2P	7504	XXIF	7260	XXUPAR	7033
UGETHO	0257	U4707	0020	XXINPU	7263	XXUSE	7416
UGH1	3562	U5010	0034	XXINT	7142	XXUUF	7212
UIEXT	0234	U7	0033	XXLBR	7105	XXWAIT	7452
UIEXT2	0243	U7760	0052	XXLE	7035	YYWAIT	7456
UIEXT3	0245	U7767	0035	XXLET	7270	ZERDON	5144
UIEXT4	0260	U7775	0021	XXLIS	7162	ZERO	0152
UINAC	0631	U7777	0050	XXLIST	7156	ZFIXEX	4767
UJMP	0254	VAR	0343	XXLIT0	7506	ZZAOB	0775
UJMS	2255	VARTEM	0553	XXLOG	7123	ZZADC	0770
UMEVAL	0031	VSCHI	3524	XXLPT	7361		
UMOPER	1321	VSCHLU	3475	XXLT	7056		
UNDERF	4645	VSCHNO	3520	XXMINU	7025		
UPAGET	0653	WAIT	7473	XXNE	7043		
UPARRO	6457	WAITC	7473	XXNEXT	7274		
UPARRX	5740	WOTEMP	1075	XXNRUB	7377		
UPARR2	4365	WORD	0050	XXOPEN	7103		
UPCOMO	0731	XEXECU	0412	XXPLOT	7422		
UPFIX	0032	XGISIT	4066	XXPLUS	7023		
UPFUN	0747	XGMUST	7345	XXPRIN	7300		
UPJMP	0736	XISIT	4073	XXPTP	7364		
UREAL	0460	XMUST	7352	XXPTR	7367		
UREJT	0456	XRESTA	1003	XXPUT	7153		
USE	7446	XXABS	7134	XXRBR	7070		
USERFN	1620	XXACPT	7466	XXREAD	7337		
USETC	0411	XXAOB	7223	XXREAL	7426		
USETF	0550	XXADC	7176	XXREJT	7473		
USETM	0416	XXATN	7120	XXREM	7327		
USETR	0400	XXBSLS	7230	XXRETR	7305		
USKIPI	7461	XXCLC	7220	XXRND	7145		
UTEMP	0053	XXCLEA	7406	XXRSTO	7322		
UTIM	0541	XXCLOS	7066	XXRUB	7372		
UUAC1	0654	XXCLS	7215	XXRUN	7165		
UUAC2	0661	XXCOMM	7062	XXSCR	7170		
UUAC3	0666	XXCOS	7112	XXSEMI	7064		
UUDATA	7567	XXCRLF	7226	XXSETC	7443		
UUDEVCO	0705	XXDATA	7343	XXSETR	7435		
UUFUDG	0735	XXDEF	7333	XXSGN	7137		
UUJMP	0722	XXDELA	7412	XXSIN	7150		
UUJMS	0707	XXDIM	7316	XXSLAS	7031		
UUMEVA	0673	XXEG	7046	XXSQR	7131		
UUNOAO	7460	XXEL	7051	XXSTAR	7027		
UUPFIX	0677	XXEND	7232	XXSTEP	7076		
UUSETF	0030	XXEOF	7502	XXSTOP	7312		